JVC

SERVICE MANUAL

2-IN-1 HiFi VHS DUPLICATOR

BR-7020E/ED/EP/SA-K724E

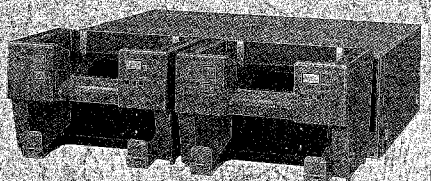


Photo shows BR-7020 with SA-L50U auto loaders (optional) installed.

Hi-Fi

VHS BR-7020E
BR-7020EP

VHS BR-7020ED

SPECIFICATIONS

GENERAL

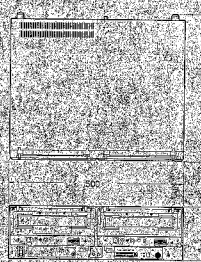
Tape format	:	VHS Europe standard BR-7020E/EP (PAL) BR-7020ED (PAL/SECAM)
Tape width	:	12.65 mm
Tape speed (SP)	:	23.39 mm/sec
Recording/ Playback time	:	180 min. (with E-180 video cassette)
Power requirement	:	220 - 240 V AC, 50/60 Hz
Power consumption	:	37 W (46 W with Remote Controller, Display and Loader)
FF/REW time	:	Less than 4'0/3'0 min. (with E-180 video cassette)
Operating temperature	:	5°C to 40°C
Storage temperature	:	-20°C to 60°C
Operating humidity	:	30 % to 80 %
Dimensions (W x H x D)	:	500 x 155 x 429 mm with foot pads
Weight	:	18 kg

VIDEO

Recording system	:	Rotary, two-head helical scan system
Luminance	:	FM recording
Colour	:	Down-converted direct recording
Signal system	:	PAL-type colour signal (BR-7020E/EP/ED) SECAM-type colour signal (BR-7020ED)
Input	:	1 Vp-p, 75 ohms, unbalanced, BNC
Output	:	1 Vp-p, 75 ohms, unbalanced, BNC
Horizontal resolution	:	250 lines (colour, PAL) 240 lines (colour, SECAM)
Signal to noise ratio	:	44 dB (colour, PAL) 43 dB (colour, SECAM)

AUDIO

Input	:	6 dBs, 50 k ohms, unbalanced, RCA (Hi-Fi/Normal)
Output	:	6 dBs, 1 k ohm, unbalanced, RCA (Hi-Fi/Normal)
Signal-to-noise ratio	:	42 dB (Normal, NR off, at 3 % distortion)
Dynamic range	:	87 dB (Hi-Fi)
Frequency response	:	40 to 12,000 Hz (Normal) 20 to 20,000 Hz (Hi-Fi)
Wow & flutter	:	0.005 % wrms (Hi-Fi) 0.2 % wrms (Normal)



unit: mm

Video and audio specifications are based on playback with a standard player/recorder.

Design and specifications subject to change without notice.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

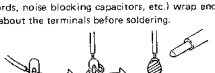

Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

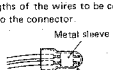

Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

Fig. 6

(5) Check the four points noted in Fig. 7.

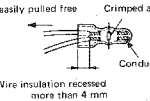
Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

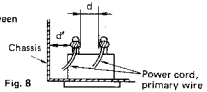

Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

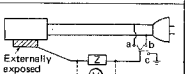

Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

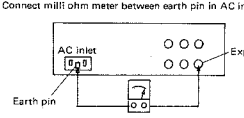

Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R≧1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R≧10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

SAFETY PRECAUTIONS

Warning Notice
FOR YOUR SAFETY (Australia)

1. Insert this plug only into effectively earthed three-pin power outlet.
2. If any doubt exists regarding the earthing, consult a qualified electrician.
3. Extension cord, if used, must be three-core correctly wired.

IMPORTANT (In the United Kingdom)
Mains Supply (AC 240 V~)
WARNING - THIS APPARATUS MUST BE EARTHED

The wires in this mains lead are coloured in accordance with the following code:

GREEN-and-YELLOW:	EARTH
BLUE:	NEUTRAL
BROWN:	LINE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.
The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked with the letter E or by the safety earth symbol ⏚ or coloured GREEN or GREEN-AND-YELLOW. The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or which is coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

POWER SYSTEM
Connection to the mains supply
The operating voltage of this set is preset to 220 – 240 V~ at the factory.
Adapting to local power line
This set operates on 220 – 240 V~, AC, 50/60 Hz.
If the preset voltage is different from the power line voltage in your area, reset the voltage selector by inserting a screwdriver into the slot of the voltage selector and turning it until the correct voltage is displayed.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC, and IEC Publ.65.

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION
To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

Note:
The rating plate and the safety caution are on the rear of the unit.

WARNING:
It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast, or cable programme and in any literary, dramatic, musical, or artistic work embodied therein.

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PRECAUTIONS

ATTENTION:
This instruction manual applies to the BR-7020E, BR-7020ED and BR-7020EP. The term "BR-7020E/ED/EP" in the text covers all three models unless otherwise specified.

The differences among the three models are as follows:

BR-7020E	Record-only unit with PAL system
BR-7020ED	Record-only unit with PAL/SECAM system
BR-7020EP	Record/playback-capable unit with PAL system

Operations and Handling of the Unit

Operations

- The duplicator is designed to be used as a recorder in dubbing. Most operations including Play (BR-7020EP only), Rec, FF, REW and Stop can only be performed using an optional remote control.
- The Play mode which can be entered using the remote control is only for testing and no playback or EE picture is available.
- Do not attempt to remove a malfunctioning recording unit while the other unit is recording as this will affect the recording unit which is operating.

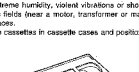
Handling and storage

- Avoid using the recorder in places subject to the following conditions:
  - extreme heat, cold, or humidity,
  - dust,
  - near appliances generating strong magnetic fields,
  - vibrations, and
  - poor ventilation.
- Be careful of moisture condensation.
  Do not use the recorder immediately after moving it from a cold place to a warm place. The water vapor in warm air will condense on the still-cold video head drum and tape guides and may cause damage to the tape and the recorder.
- Handle the recorder carefully.
  - Do not block the ventilation openings.
  - Do not place anything heavy on the recorder.
  - Do not place anything which might spill on the top cover of the recorder.
  - Use in horizontal (flat) position only.
- During transportation,
  - Avoid violent shocks to the recorder during packing and transportation.
    Before packing, be sure to remove the cassette from the recorder.

Video Cassettes

This recorder uses VHS cassettes.
VHS: E-180 for 180 minutes, E-120 for 120 minutes, E-90 for 90 minutes, E-60 for 60 minutes, and E-30 for 30 minutes of recording.

- Video cassettes are equipped with a safety tab to prevent accidental erasure. However, as this unit is a duplicator, it can record on cassettes whether this tab is present or not.
- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid extreme humidity, violent vibrations or shocks, strong magnetic fields (near a motor, transformer or magnet), and dusty places.
- Place the cassettes in cassette cases and position vertically.



FEATURES

Two-in-one cost-saving design
With two Hi-Fi VHS recording chassis in a single compact cabinet, the BR-7020E/ED/EP offers substantial cost savings across the board. Because it is the same height and only slightly wider than a conventional single-chassis duplicator, it occupies much less space on a standard rack than an equivalent number of single-chassis machines. Power consumption per chassis – even with auto-loaders – is also much less than that of single-chassis machines. And, because both units in the BR-7020E/ED/EP record from single channel inputs, significant savings in cable and peripheral equipment costs can also be achieved.

High quality pictures and sound
To assure the best possible dubbing quality, the BR-7020E/ED/EP incorporates the same advanced picture-improvement circuitry used in JVC's Professional S editing recorders for improved chroma signal response at low levels. The superior audio performance characteristics of the Hi-Fi VHS recording system have been improved still further with the incorporation of a current stabiliser which maintains the current supplied to the Hi-Fi audio heads at a constant level.

Improved reliability and durability
To improve wear resistance and ensure stable transport over long periods of operation, a high-molecular-weight silicone polymer is used in the lower drum. Long-term durability has been further assured by the use of specially-hardened materials in the slant and tension poles, as well as by thickening the capstan shaft and the take-up pole next to the A/C head. An auto head cleaner and high-performance brushless capstan motor also increase the service life of the unit.

Auto-loading capability for improved productivity
To meet today's demands for greater mass-dubbing efficiency, the BR-7020E/ED/EP features automatic cassette loading capability. Simply attach an optional SA-LS9U auto loader to each recording unit for continuous automatic operation. Each loader can simultaneously hold two blank cassettes in standby and two recorded cassettes in the catcher tray. With the optional extension holder, you can increase the number of cassettes held at one time to 4 in standby and 4 in the catcher tray.

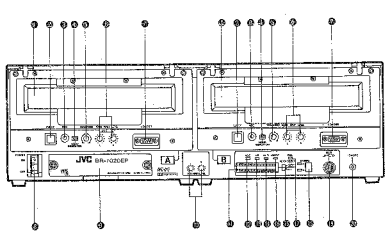
Improved serviceability with removable chassis and digital self-diagnostics
Maintenance considerations have been given top priority in every aspect of the BR-7020E/ED/EP's design. Whenever a problem occurs numeric or alphabetical warning indications are displayed on the front panel for quick identification and troubleshooting. Downtime is virtually eliminated because each recording chassis can be independently removed for repair or replacement. Other maintenance-oriented features include a special mechanism which allows independent adjustment of the angle, height, and azimuth of the A/C head, a convenient DIP switch pocket for easy DIP switch setting, and an optional test point unit which can be used with multiple machines.

Multi-display unit (optional)
JVC has taken cost-efficiency a step further with the BR-7020E/ED/EP by eliminating features that are redundant in a multiple-machine operation and transferring them to a separately available multi-display unit. Connectable to the front panel of the BR-7020E/ED/EP, the functions and displays on this unit include remote control of the BR-7020E/ED/EP, audio VU level meters, digital 99,900-hour meter, ID code generator for ID code input, and ID code reader.

Other features
- Internal 8-digit ID code recording system with external ID code input capability
- Hi-Fi audio recording ON/OFF function (also possible via serial remote control)
- Video AGC ON/OFF function for use with Macrovision* copy-protection system (also possible via serial remote control)
- Dolby* Noise Reduction ON/OFF for normal audio (also possible via serial remote control)
- Separate input terminals for Hi-Fi and normal audio
- Switchable audio limiter
- Independent level controls for each audio channel
- 3-colour LED hour meter indicator
- 34-pin parallel remote control connector
- RCA serial remote control IN/BUF OUT connectors
- REC/WARNING indicators
- Warning output connector

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. Dolby and the Double-D symbol ⒹⒹ are trademarks of the Dolby Laboratories Licensing Corporation.

CONTROLS AND CONNECTORS



❶ Cassette loading slot

❷ EJECT button
- Cassettes can be ejected independently from each chassis.

❸ REC indicator
- Lights during recording.
- Blinks when a malfunction occurs during playback (BR-7020EP only) or recording.

❹ Hour meter LED indicator
- LED color changes from Green to Orange to Red to indicate approximate total operating hours.

0H	1000H	2000H	3000H
	Green Lit	Green Blinking	Orange Lit

4000H	5000H	6000H
Orange Blinking	Red Lit	Red Blinking

❺ TRACKING control

❻ NORM INPUT LEVEL L/R controls
- To adjust the normal audio recording level for each channel.

❼ LOADER connector
- Connect the SA-L50U auto loader's VTR cable (optional).
- DC power supply with cassette loaded: 20 V DC 0.42 A, 5 V DC 0.15 A (Normal current: 20 V DC 0.015 A, 5 V DC 0.10 A)

❽ POWER switch

❾ DIP switch packet (☞ p. 7)

❿ HI-FI INPUT LEVEL L/R controls
- To adjust the Hi-Fi audio recording level for each channel.

⓫ Audio input level meters (L/R)

⓬ Video AGC indicator
- Lights when the video AGC circuit is operating during recording.

⓭ Dolby NR indicator (NR)

⓮ Hi-Fi audio recording indicator (Hi-Fi)

⓯ Audio limiter indicator (LIMITER)

⓰ METER SELECT switch
- To select HI-FI, NORMAL A, or NORMAL B audio level indication.
- Hi-Fi audio recording level is simultaneously adjusted for both chassis.
- Normal audio recording level can be separately adjusted for each chassis (A or B).

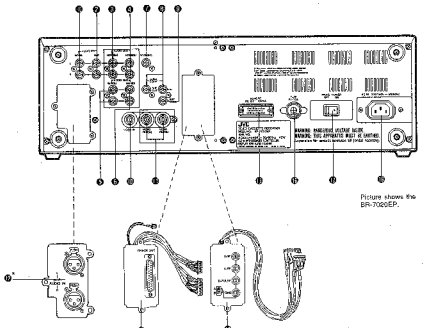
⓱ PAL indicator
- Lights when the power is on.
- When the BR-7020ED is in the SECAM mode, this indicator goes off.

⓲ WARNING display
- Displays an alphanumeric warning code when a malfunction occurs.
- The A or B indicator also lights to indicate which chassis is malfunctioning.

⓳ MULTI CONNECTOR terminal
- Connect the optional SA-K720U Multi-Display Unit.

⓴ REMOTE terminal
- Connect the optional RM-G30U Remote Control Unit.

REAR PANEL



Picture shows the BR-7020EP.

❶ AUDIO IN NORM connectors
- Normal audio input L/R connectors for both chassis.

❷ AUDIO IN Hi-Fi connectors
- Hi-Fi audio input L/R connectors for both chassis.

❸ AUDIO OUT NORM (A) connectors (BR-7020EP only)
- Normal audio output L/R connectors for chassis A.

❹ AUDIO OUT NORM (B) connectors (BR-7020EP only)
- Normal audio output L/R connectors for chassis B.

❺ AUDIO OUT Hi-Fi (A) connectors (BR-7020EP only)
- Hi-Fi audio output L/R connectors for chassis A.

❻ AUDIO OUT Hi-Fi (B) connectors (BR-7020EP only)
- Hi-Fi audio output L/R connectors for chassis B.

❼ WARNING OUT connector
- Outputs a warning signal when a chassis is malfunctioning.

❽ SERIAL CODE IN/BUF OUT terminals
- Serial code signals input to the IN terminal are processed by a buffer and then output from the OUT terminal, reducing wiring loss when controlling numerous units in series.
- Connect the OUT terminal to the IN terminal of another duplicator.

❾ EXT CODE input terminal
- Connect an external CTL code generator.

❿ VIDEO IN connector
- For composite video signal input.

⓫ VIDEO OUT connectors (A/B) (BR-7020EP only)
- For output of the playback video signal output from each chassis.

⓬ AUDIO IN Hi-Fi connectors (XLR) (SA-K724E, optional)*

⓭ Check out connector (SA-K721U, optional)

⓮ Test point unit (SA-K722U, optional)
- Outputs Hi-Fi audio RF and video RF signals from chassis A or B as selected with the A/B switch. These signals can be checked on an oscilloscope.

⓯ REMOTE connector (34-pin)
- Connect a parallel remote control unit.

⓰ Fuse

⓱ MAINS POWER switch
- Set to ON to supply power to the recorder.

⓲ AC input socket (AC IN)

*For more information, ☞ p. 12.

DIP SWITCH SETTING

DIP SW. No.	No. of positions	Factory setting	Purpose
1 — 1	2	OFF	Zero return: Rewinds to the point where recording started.
1 — 2	2	ON	Warning E: Tape End detection.
1 — 3	2	OFF	Warning H/F: No Video and bad SYNC detection.
1 — 4	2	OFF	Keep set to OFF.
1 — 5	2	OFF	Loader mode
1 — 6	2	OFF	Loader mode
1 — 7	2	OFF	Auto rewind at tape end.
1 — 8	2	ON	Keep set to ON.
2	3	ON	Hi-Fi Audio
3 — 1	2	ON	AGC ON/OFF
3 — 2	2	ON	Limiter ON/OFF
3 — 3	2	ON	NR ON/OFF
3 — 4	2	OFF	Not used.
3 — 5	2	OFF	ON/OFF= PAL/SECAM
3 — 6	2	ON	ID Code recording — EXT: ON*1, INTERNAL: OFF*2.
3 — 7	2	ON	ON/OFF=Local/Remote: 3 – 1 – 3 – 5 remote or locally controlled.

	SW 1 — 5	SW 1 — 6
AUTO	ON	ON
Manual — I	ON	OFF
Manual — II	OFF	ON
No Loader	OFF	OFF

	SW-2
Hi-Fi REC ON	ON (manual)
Hi-Fi REC OFF	OFF (manual)
Hi-Fi ON/OFF	Remote (remote controlled)

*1: ID code will not be recorded if no ID signal is input.
*2: External ID will be recorded if ID signal is input.

NOTE:
- Refer servicing to qualified service personnel.

WARNING DISPLAY

The Warning Display indicates various malfunctions and warnings for each unit with alphanumeric codes.

	Code	Cause of trouble/warning	Symptom/Operation
Loading Mechanism	1	Tape cannot be loaded.	STOP mode is engaged and all controls except front panel EJECT are inoperative. Recovers when a cassette is inserted again.
	2	Tape cannot be unloaded.	All operations stop and all controls are inoperative. Recovers when the power switch is off.
Cassette Compartment	3	Cassette tray does not retract.	The cassette is ejected. Recovers when a cassette is inserted again.
	4	Cassette tray does not lift.	Same as Code No. 1.
Rotating system	6	Drum motor stops.	Same as Code No. 1.
	8	Reel rotates abnormally (eg. tape slack).	Same as Code No. 1.
Others	9	Tape damage (ie. broken, wrinkled, scratched, etc.)	Same as Code No. 1.
	A	Servo mechanism defective (DC 5 V power supply for servo)	All operations stop and all controls are inoperative. Recovers when the servo circuit is recovered.
	E	Detects tape end during recording mode. (When one tape is shorter than those in other units.)	Same as Code No. 1.
	F	Drum servo abnormal synchronisation during recording mode.	Same as Code No. 1.
	H	No video input signal during recording mode.	Same as Code No. 1. Otherwise, recovers when video signal is supplied.

NOTES:
- If one of the recording units shows the warning 6, 8, 9, E or F, the malfunctioning unit stops with tape loaded. The cassette cannot be ejected from this unit until the other unit stops recording.

CONNECTOR SPECIFICATIONS

26 PIN REMOTE CONNECTOR

Pin. No.	Signal	Pin. No.	Signal	Pin. No.	Signal
1	REC CMD	13	—	25	FF TALLY
2	PLAY CMD	14	—	26	REW TALLY
3	FF CMD	15	—	27	—
4	REW CMD	16	—	28	—
5	STOP CMD	17	—	29	PAUSE TALLY
6	—	18	—	30	—
7	PAUSE CMD	19	—	31	—
8	STOP TALLY	20	—	32	—
9	—	21	EJECT CMD	33	—
10	—	22	—	34	12 V DC
11	—	23	REC TALLY		
12	GND	24	PLAY TALLY		

12 PIN MULTI DISPLAY CONNECTOR

Pin No.	Signal
1	Serial clock
2	GND
3	Serial-Out-2
4	Serial-In-1
5	Latch signal
6	Parallel-to-serial timing pulse
7	+12 V
8	R-ch meter IN
9	GND
10	L-ch meter IN
11	Front serial code IN
12	Remote ON

8 PIN AUTO/MANUAL CONNECTOR

Pin. No.	Signal	Remark
1	+20 V INPUT	+20 +/- 2 V INPUT
2	+5 V INPUT	+5 +/- 0.5 V INPUT
3	GND	—
4	CASSETTE IN INPUT	CAS IN L/OUT H
5	CASSETTE OUT INPUT	CAS OUT L/IN H
6	AUTO OFF INPUT	AUTO OFF L/OTHER H
7	EJECT SW (1)	EJECT L
8	TAPE RUN	FF./REW H/REC PLAY (PAUSE), OTHER L
9	START INPUT	CHANGER START L

21 PIN BOARD OUT CONNECTOR

Pin. No.	Signal	Pin. No.	Signal	Pin. No.	Signal
1	V-RF output (A unit)	10	GND	19	Rch norm B Out (B unit)
2	GND	11	—	20	Lch norm B Out (B unit)
3	V-RF output (B unit)	12	—	21	Rch norm A Out (A unit)
4	GND	13	Drum RF output (A unit)	22	Lch norm A Out (A unit)
5	—	14	—	23	GND
6	—	15	EJECT CMD (B unit)	24	—
7	A-RF output (A unit)	16	EJECT CMD (A unit)	25	Drum FF output (B unit)
8	GND	17	—		
9	A-RF output (B unit)	18	—		

SPECIFICATIONS

GENERAL

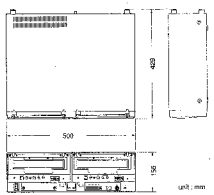
Tape format	:	VHS Europe standard BR-7020E/EP (PAL) BR-7020ED (PAL/SECAM)
Tape width	:	12.65 mm
Tape speed (SP)	:	23.39 mm/sec
Recording/ Playback time	:	180 min. (with E-180 video cassette)
Power requirement	:	220 – 240 V AC, 50/60 Hz
Power consumption	:	37 W (48 W with Remote Controller, Display and Loader)
FR/REW time	:	Less than 4.0/3.0 min. (with E-180 video cassette)
Operating temperature	:	5°C to 40°C
Storage temperature	:	–20°C to 60°C
Operating humidity	:	30 % to 80 %
Dimensions (WxHxD)	:	500 x 155 x 429 mm with foot pads
Weight	:	18 kg

VIDEO

Recording system	:	Rotary two-head helical scan system
Luminance	:	FM recording
Colour	:	Down-converted direct recording
Signal system	:	PAL-type colour signal (BR-7030E/ED/EP) SECAM-type colour signal (BR-7020ED)
Input	:	0.5 to 2.0 Vp-p, 75 ohms, unbalanced, BNC
Output	:	1.0 Vp-p, 75 ohms, unbalanced, BNC
Horizontal resolution	:	250 lines (colour, PAL) 240 lines (colour, SECAM)
Signal-to-noise ratio	:	44 dB (colour, PAL) 43 dB (colour, SECAM)

AUDIO

Input	:	–6 dBs, 50 k-ohms, unbalanced, RCA (Hi-Fi/Normal)
Output (BR-7020EP only)	:	–6 dBs, 1 k-ohm, unbalanced, RCA (Hi-Fi/Normal)
Signal-to-noise ratio	:	42 dB (Normal: NR-off, at 3 % distortion)
Dynamic range	:	87 dB (Hi-Fi)
Frequency response	:	40 to 12,000 Hz (Normal) 20 to 20,000 Hz (Hi-Fi)
Wow & flutter	:	0.005 % wrms (Hi-Fi) 0.2 % wrms (Normal)

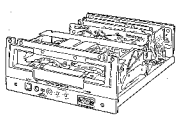


Video and audio specifications are based on playback with a standard player/recorder.

Design and specifications subject to change without notice.

OPTIONAL ACCESSORIES

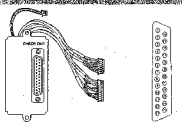
SA-X7020E REPLACEMENT CHASSIS



Function : Replacement chassis for BR-7020B/ED/EP.

Specifications
Dimensions : 240 (W) x 110 (H) x 350 (D) mm
Weight : 4 kg

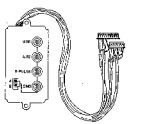
VC-X7211E CHECK OUT CONNECTOR



Function : Signal output unit for automatic QC.

Specifications
Dimensions : 42 (W) x 92 (H) x 24 (D) mm
Weight : 64 g

SA-X7211E VIDEO UNIT

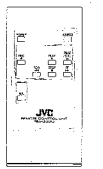


Function : Outputs Hi-Fi audio and video head signals for checking.

Specifications
Dimensions : 42 (W) x 92 (H) x 20 (D) mm
Weight : 58 g

	Connection	Items to be checked	Standard waveform
Hi-Fi audio head output	To oscilloscope Input terminal Trigger terminal GND terminal	• Tape-to-head contact • Tape running stability • Interior RF after head replacement • Abnormality in RF (incl. heads)	"+" triggered CH1 CH2
Video head output	To oscilloscope Input terminal Trigger terminal GND terminal	• Compatibility of tape pattern • Tape-to-head contact • Tape running stability • Tracking • Video recording level • Abnormality in RF	"+" triggered CH2 CH1

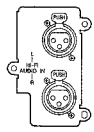
RM-G30U REMOTE CONTROL UNIT



Function : Remote-controls PLAY (BR-7020EP only), FF, REW, STOP, PAUSE (STILL), POWER ON/OFF, and EJECT.
- Normally connected to the front panel REMOTE connector. When used with the BR-7020E/ED/EP, the recorder's Hi-Fi audio recording function is always ON.
- The RM-G30U can also be connected to the rear panel SERIAL CODE IN terminal. In this case, the coaxial button must be pressed while pressing the H/L button. Up to 50 units can be controlled via series connection.

Specifications
Dimensions : 62 (W) x 139 (H) x 18 (D) mm
Weight : 160 g
Accessories : "R6/AA/UM-3" battery x 2
RCA-to-mini conversion plug

SA-X7211E XLR CONNECTORS

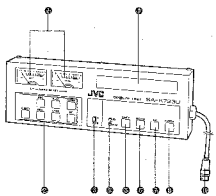


Function : XLR connectors for Hi-Fi audio input. (Lockable)

Specifications
Input : –8 dBs, 10 k-ohms, balanced
Dimensions : 84 (W) x 76 (H) x 43 (D) mm
Weight : 75 g

*This product will be installed at the factory as ordered when purchasing. It is not available as an ordinary optional product.

Controls and Operations



❶ **AUDIO LEVEL METER (L/R)**
Indicates input audio level for Hi-Fi A, Hi-Fi B, Normal A, or Normal B. Use the METER SELECT switch on the BR-7020E/ED/EP's front panel to select the audio channel you want to display.

❷ **Operation buttons (REC/PLAY/PAUSE/EJECT/REW/STOP/FF)**
Operates A and B units simultaneously.

❸ **A/B select switch**
Selects the type of data to display on the counter.
A : To display unit A data.
B : To display unit B data.

❹ **ID/H.M select switch**
Selects the type of data to display on the counter.
ID : To display ID code.
H.M : To display hour meter data.

❺ **SHIFT button**
- Moves the blinking digit on the counter when the ID/H.M select switch is set to "ID". The blinking digit shifts from right to left each time the button is pressed.
- Selects the hour meter data items for display on the counter when the ID/H.M select switch is set to "H.M". Available items are as follows:
  Drum rotating hours → Total drum rotating hours → Reel rotating hours → Capstan rotating hours → Drum rotating hours...

❻ **DOWN button**
- Decreases the value of the blinking digit when the ID/H.M select switch is set to "ID".
  0 → 9 → 8 → 7 → .... 2 → 1 → 0 ...
- With the ID/H.M select switch set to "H.M", engages hour meter reset mode (except total drum rotating hours) when pressed together with the UP button. The current hour meter data will start blinking.

❼ **UP button**
- Advances the value of the blinking digit when the ID/H.M select switch is set to "ID".
  0 → 1 → 2 → 3 → 4 → .... 9 → 0 → 1 ...
- With the ID/H.M select switch set to "H.M", engages hour meter reset mode (except total drum rotating hours) when pressed together with the DOWN button. The current hour meter data will start blinking.

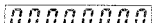
❽ **ENTER button**
- Transfers preset ID code to the BR-7020E/ED/EP when the ID/H.M select switch is set to "ID".
- Resets the blinking hour meter data to zero when the ID/H.M select switch is set to "H.M" (except total drum rotating hours).

❾ **Counter display**

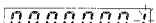
❿ **12-pin connector**
- Connect to the BR-7020E/ED/EP's front panel MULTI CONNECTOR terminal.

ID code setting

- Turn the VCR power on.
1. Select either the A or B unit with the A/B select switch.
2. Set the ID/H.M switch to "ID".
   - The current ID code (if set) appears on the counter.



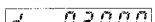
3. Press SHIFT.
   - The rightmost digit starts blinking.
4. Enter desired digit with the UP or DOWN button, then press SHIFT.



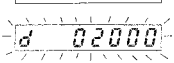
5. Set the value of other digits in the same way.
6. Press ENTER to transfer the data to the VCR.
7. Set the other unit's ID code in the same way.

Hour meter resetting

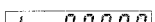
- Turn the VCR power on.
1. Select either the A or B unit with the A/B select switch.
2. Set the ID/H.M select switch to "H.M".
3. Press SHIFT to select the hour meter items to reset. (Total drum rotating hour resetting is not possible.)



4. Press UP and DOWN simultaneously.
   The hour meter data blinks.



5. Press ENTER to reset the data.



Specifications:

Rated voltage	:	DC 12 V
Power consumption	:	7 W
Dimensions	:	233 (W) x 80 (H) x 35 (D) mm
Weight	:	640 g

Safety Precautions

This unit should be installed by authorized service personnel only.

CAUTION:
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

WARNING:
TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

Precautions

- This unit should be installed by authorized service personnel only.
- Be sure to switch off the VCR's power before connecting this unit.
- Avoid unnecessary shocks to the unit. Shocks sustained during recording can cause picture shake.

Before installing the unit, be sure that there are no cassettes in either the SA-L50U or the VCR. If there is a cassette in this unit the upper or lower cassette holder indicator may flash. In this case, remove the cassette and press the RESET button.

Features

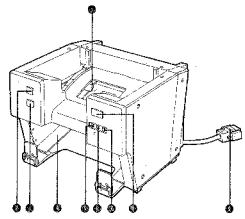
Easy installation
Specifically designed for use with JVC's duplicators, the SA-L50U can easily be attached to the BR-7020E/ED/EP. Simply hook it to the provided slots on the duplicator and plug the VCR connector cable on the rear into the LOADER connector on the BR-7020E/ED/EP's front panel.*
* The accessory mounting brackets should be installed by authorized service personnel only.

Multiple cassette handling
The basic SA-L50U unit can hold two blank cassettes in standby for recording and two ejected cassettes in its lower cassette holder. By installing the optional adapter, you can increase cassette handling capacity to 4 in standby and 4 in the lower cassette holder.

Automatic and manual loading
Cassettes are loaded automatically as soon as the loading signal is received from the VCR. Manual loading is also possible using the LOAD button on the front of the SA-L50U. An EJECT button is also provided for manual ejection of cassettes. LED indicators are provided to show current loader status.

Self-diagnostic warning system
Built-in self-diagnostic circuitry ensures high reliability and a warning indicator is provided to alert users to malfunctions.

Controls and Connectors



1 Upper cassette holder
Holds two cassettes in standby for loading. With the optional extension holder adapter attached, up to four cassettes can be held.

2 Upper cassette holder indicator
- Lights when the upper cassette holder is empty.
- Blinks at 1-second intervals when a cassette must be removed or when a cassette has been placed improperly. Eg, the wrong way round.

3 Lower cassette holder indicator
- Lights when the lower cassette holder is full.
- Blinks at 1-second intervals when the lower cassette holder is full and an attempt has been made to eject a cassette.

4 Lower cassette holder
Holds two ejected cassettes. With the optional extension holder adapter attached, up to four cassettes can be held.

5 RESET button
Resets the unit in the CHANGER ERROR mode.

6 EJECT button (AUTO OFF Reset button)
- Ejects the cassette in the VCR.
- Resets the VCR in the AUTO OFF mode.

7 LOAD button
Press to load the cassette when manual loading is desired.

8 AUTO OFF/CHANGER ERROR/EJECT/TAPE RUN indicator
- Red lamp flashes at 0.1-second intervals when the VCR is in the AUTO OFF mode.
- Red lamp blinks at 1-second intervals in the CHANGER ERROR mode.
- Red lamp lights when a cassette is ejected from the VCR.
- Green lamp blinks when the VCR is in the REC or PLAY mode.
- Green lamp lights when the VCR is in the FF or REW mode.

9 VCR Connector (9-pin)
Connect to the BR-7020E/ED/EP's front-panel LOADER connector.

Operation

Before using this unit, always be sure to press the EJECT button (either on this unit, the VCR, or the remote control). Operation starts after the button is pressed.

a) Cassette insertion guide is in standby position ❶.

b) When loading starts, the guide moves to the cassette insertion start position ❷.

c) The guide moves from ❷ to ❸, pushing CAS1 and inserting it into the VCR.

d) The guide returns to position ❶.

e) When CAS1 is ejected, the guide moves from ❶ to ❷ after cassette-up detection. The guide locks onto CAS1 and slides it down into the lower cassette holder, then returns to position ❷ and stands by for the insertion of CAS2.

Indicators

Loader status is shown by the colour and activity (ie. blinking or continuously lit) of these indicators.

Upper cassette holder indicator		Lower cassette holder indicator		AUTO OFF/ERROR/ EJECT indicator		Cause
				Blinking		
Continuously lit	Blinking	Continuously lit	Blinking	Continuously lit	at intervals of 1 sec.	at intervals of 0.1 sec.	
○							No cassette in upper cassette holder.
	○						Inverted cassette.
		○					Lower cassette holder is full.
			○				Lower cassette holder is full with another cassette already ejected.
				○			No cassette in recorder (cassette has been ejected).
						○ *1	AUTO OFF mode is entered.
					○ *2		1. Motor overloaded. 2. Cassette loading guide too slow. 3. Ejected cassette is not discharged into lower cassette holder. 4. Tape loading is not completed within 4 seconds after cassette is inserted into the recorder. 5. Tape loading is attempted, but fails.

*1: The loader stops. Turn the power off and eliminate the cause. Then turn the power on. (The AUTO OFF mode can be cancelled by pressing the loader's AUTO OFF RESET (EJECT) button.)

*2: The loader stops. Eliminate the cause and press the RESET button or operate the BR-7020E/ED/EP's POWER switch (or ON/OFF.

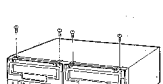
Specifications:

Power requirement : 20 V ±2 V, 0.42 A, DC 5 V, 0.15 A
Dimensions : 235 (W) x 160 (H) x 200 (D) mm
Weight : 2 kg
Accessories : Cassette holder (VGQ2146/2147) x 2
Screw x 4

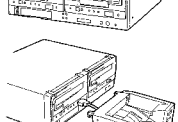
Installing the SA-L50U

- Before installation, be sure all necessary adjustments to the BR-7020E/ED/EP have been carried out.
- Turn the VCR's power off before installation.

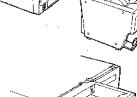
1. Unscrew the latch covers on the top panel and remove as illustrated.



2. Connect the SA-L50U 8-pin cable to the LOADER connector on the VCR front panel and secure it with screws as illustrated.

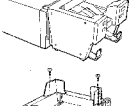


3. Attach the SA-L50U to the VCR by hooking it to the latches as illustrated.
4. Install the other loader in the same way.



Attaching the optional extension holder

1. Attach the upper extension holder to the loader with screws as illustrated.
2. Remove the screws and remove both cassette hooks as illustrated.
3. Attach the lower extension holder to the bottom of the loader and secure it with screws as illustrated.



NOTES:
When the lower cassette holder is empty, it will be positioned vertically, as shown by the arrow.

SECTION 1
DISASSEMBLY AND SERVICE CAUTIONS

1.1 REMOVAL OF EXTERNAL COVERS

1.1.1 Top cover

(1) Remove four screws ① and one screw ②.
(2) Lift the top cover by the rear while removing it.

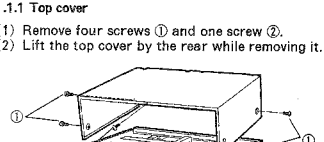


Fig. 1-1-1

1.1.2 Front panel

(1) Take out the mechanism units A and B outwards.
(2) Remove the top cover.
(3) Remove 1 2 P-ROM & SWITCH board.
(4) Remove seven screws ③ (see Fig. 1-1-4, too) and take off the front panel.

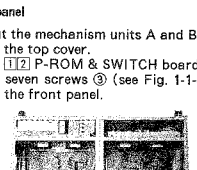


Fig. 1-1-2

1.1.3 Rear panel

(1) Remove four pieces of the feet.
(2) Remove two screws ④ and take off the rear panel.

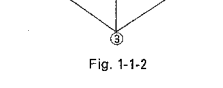


Fig. 1-1-3

1.1.4 Bottom cover

(1) Take off the top cover.
(2) Lay the set on its rear panel.
(3) Remove six screws ⑤ and remove feet.
(4) Pull up the bottom cover toward the front panel while removing it.

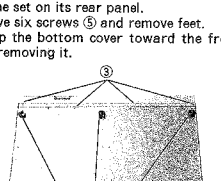


Fig. 1-1-4

1.1.5 Rear bracket

(1) Take off the top cover.
(2) Remove eight screws ⑥ and remove the rear bracket.

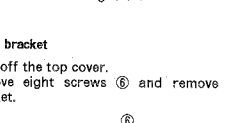


Fig. 1-1-5

1.1.6 Removal of fuse

(1) Take off the top cover.
(2) There are fuses placed in the rear right side of the set and in the rear left side (inside the switching regulator) of the set.
(3) Rating and location of each fuse are as follows.

F1	250V, T2.0	A (on the rear panel)
F2	250V, T3.15	A (switching regulator)
F01	250V, T1.6	A (on the FUSE board)
F02	250V, T1.0	A (on the FUSE board)
F03	250V, T1.0	A (on the FUSE board)
F04	250V, T1.0	A (on the FUSE board)

1.2 REMOVAL OF MAIN BOARDS

Note: Before removing and resetting any board, make sure to turn off the power switch. Any board that was removed once must be reinstalled as it was.

Group	Board Name	Removing & Resetting Manner
A	[01] AUDIO MAIN [02] VIDEO A [03] VIDEO B (EP) [210] SECAM COLOR (ED)	(1) Take off the top cover (see 1.1.1). (2) Take out the mechanism units A and B. (3) Disconnect all connectors from the board. (4) Unhinge the board and take it out.
B	[04] SYSCON	(1) Do the same work as mentioned in the steps (1) through (3) for the group A. (2) Remove [112] P-ROM & SWITCH board. (3) Remove two screws retaining the board. (4) Unhinge the board and take it out.
C	[05] VIDEO PRE/REC	(1) Take out the mechanism units. (2) Disconnect all connectors from the board. (3) Remove three screws and take out the board.
D	[06] SERVO [07] NORMAL AUDIO [08] FMA PRE/REC	(1) Take out the mechanism units. (2) Remove the board holder and lift the board upwards while removing it. (3) Disconnect all connectors from the board.
E	[09] MOTHER	(1) Take out the mechanism units. (2) Remove all boards of the group D. (3) Disconnect all connectors from the boards. (4) Remove four screws retaining the multi-connector. (5) Remove four screws and take out the MOTHER board.
F	[09] REAR-1 [111] REAR-2 [114] SUB REGULATOR SWITCHING REGULATOR	(1) Take off the top cover (see 1.1.1). (2) Remove the rear bracket (see 1.1.5). (3) Proceed to do the work mentioned in 1.2.1 Group F.

1.2.1 Group F

1. REAR-1 board <09>

(1) Remove all screws retaining the connectors.
(2) Disconnect all housings from the REAR-1 board and take out the board.

Fig. 1-2-1

2. REAR-2 board <11>

(1) Disconnect all connectors from the board.
(2) Remove two screws ① and take out the board together with the board bracket.

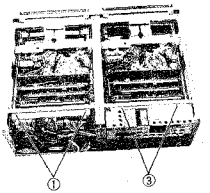


Fig. 1-2-2

3. SUB REGULATOR board <14>

(1) Disconnect all connectors from the board.
(2) Remove four screws ② and take out the board.

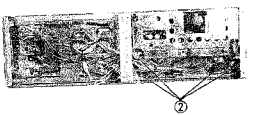


Fig. 1-2-3

4. SWITCHING REGULATOR

(1) Disconnect connection of CN1 of 1 4 SUB REGULATOR board.
(2) Disconnect connection of the relay wire.
(3) Remove four screws ③ (see Fig. 1-2-2, too) and take out the switching regulator.

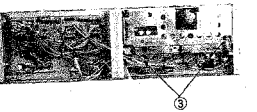


Fig. 1-2-4

1.3 INTERNAL SWITCHES

1.3.1 Switches on 112P-ROM & SWITCH board

Symbol No.	Switch Name	Initial Setting	Function at ON setting
SW1-1	REC return (zero return)	1 2 3 4 5 6 7 8 ON OFF	1-1 Stop the tape at the point where recording started in FF and REW modes.
1-2	Warning E		1-2 When tape end detection in REC mode enter "Warning E".
1-3	Warning F/H cancel		1-3 To make recording possible even when no video signal is input or servo synchronization is disordered.
1-4	Not used (always OFF)		1-4 Set to OFF always.
1-5 1-6	LOADER mode select switch		1-5 1-6 AUTO: SW1-5 ON, SW1-6 ON MANU1: SW1-5 ON, SW1-6 OFF MANU2: SW1-5 OFF, SW1-6 ON No LOADER: SW1-5 OFF, SW1-6 OFF
1-7	AUTO REW		1-7 To set the mechanism to the auto-rewind mode, namely, tape will be automatically rewound to the tape begin when tape end detect in recording and playback. (To active this function in REC mode, set SW1-2 to OFF.) As an exceptional, if SW1-1 is set to ON in REC mode, tape is rewound to the start point of the last recording.
1-8	NTSC/PAL select (Set to ON always.)		1-8 ON : For PAL model (Set to this position.) OFF: For NTSC model (Don't set to OFF for this model.)
SW2	HI-FI REC switch	ON (center)	REMOTE : ON/OFF switching of Hi-Fi audio recording is remote-controllable by serial coded input (through RCA INPUT on the rear panel). ON : Hi-Fi audio is recordable. OFF : Hi-Fi audio is not recordable.
SW3-1	AGC ON/OFF switch	E/EP 1 2 3 4 5 6 7 ON OFF ED 1 2 3 4 5 6 7 ON OFF	3-6 Depending on setting conditions of this switch and EXT CODE connector on the rear panel, recordable ID codes change. OFF : EXT code and INT code are recorded. ON : Only EXT code is recorded. For details of ID codes, refer to the section 3.5 "ID code system for dubbing machines" of the technical guide to the BR-7030E/ED (No. T-9015).
3-2	LIMITER ON/OFF switch		
3-3	NR ON/OFF switch		
3-4	Not used (always OFF)		
3-5	Not used (E/EP) PAL(ON)/SECAM(OFF) select switch (ED only)		
3-6	ID CODE switch		SW3-6 / EXT IN / ID CODE OFF: OPEN: INT CODE OFF: H: EXT Duty 60% OFF: L: EXT Duty 27.5% ON: OPEN: EXT Duty 60% ON: L: EXT Duty 27.5% ***Note: * For recording both of INT code and EXT code, make sure to keep a blank interval of 5 seconds or more between the two codes.*** **** Each code needs to record for 20 seconds or more.*** **** For reading ID code, continue playback with the servo got locked for more than 20 seconds.***
3-7	LOCAL/REMOTE switch		3-7 LOCAL/REMOTE operation selector switch for DIP SW3-1 to SW3-3 (and SW3-5 ED only). ON: For LOCAL operation OFF: For REMOTE operation
SW4, 5	OPTIONAL switch Use setting to "00" usually.	00	For factory use only. 98: FULL REPEAT mode When tape is intake or it detects the tape end, it is rewound to the tape begin and recording starts. (Regardless of setting of SW1-2, 1-3) 99: HOUR METER TEST mode It advances the hour meter to read 100 hours every 1 minute.

1.3.2 Switch on 210 SECAM COLOR board

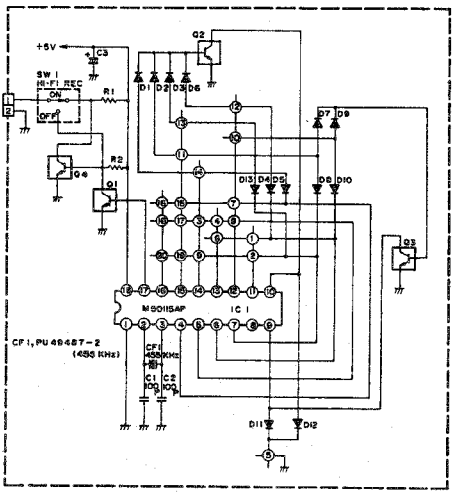
Symbol No.	Switch Name	Initial Setting	Function
SW1	FORCED COLOR switch (always AUTO position)	AUTO	AUTO: For COLOR/B/W detection automatically. C : For always COLOR mode.

SW NO.	COMMAND	CODE							REMARKS
		D6	D5	D4	D3	D2	D1	D0	
①	STOP	0	0	0	0	0	1	1	
②	EJECT	0	0	0	0	1	0	0	
④	PLAY	0	0	0	1	1	0	0	
	REC	1	1	0	1	1	0	0	SW④+⑤
⑥	STILL	0	0	0	1	1	0	1	
	REC PAUSE	1	1	0	1	1	0	1	SW⑤+⑥
⑦	FF	0	0	0	0	1	1	0	
⑧	REW	0	0	0	0	1	1	1	
⑨	INTAKE	0	0	1	0	0	1	1	
⑩	PAL	1	0	0	1	0	0	0	
⑪	SECAM	1	1	1	1	0	0	0	
⑮	AGC ON	0	0	1	0	1	0	1	
⑯	AGC OFF	0	0	1	1	0	1	0	
⑰	LIMITER ON	0	0	1	0	1	1	0	
⑱	LIMITE OFF	0	0	1	1	0	1	1	
⑲	NR ON	0	0	1	1	0	0	0	
㉒	NR OFF	0	0	1	1	1	0	1	

1.4 SERIAL REMOTE COMMANDS

This model is equipped with two serial code input connectors; one is mini jack (ϕ3.5) on the front panel and the other is RCA pin jack on the rear panel.

- Example of circuit



SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

(1) When using a soldering iron, disconnect the power cord after heating it.
(2) When disconnecting connectors, do not pull connector cables by a strong force.
(3) Do not disturb adjusting parts such as volumes thoughtlessly as there is a trouble of unknown reason.

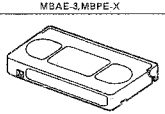
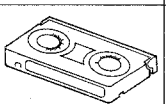
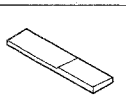
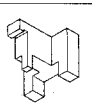
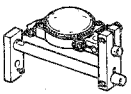
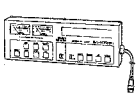
2.1.2 Mechanism operation check

For operating the mechanism without the cassette housing, prepare the mechanism as mentioned below.
(1) Disconnect the power cord from the AC outlet.
(2) Remove the cassette housing and disconnect connection of CN1 on the CASSETTE HOUSING board.
(3) Short-circuit between pin 1 and pin 2 of CN1.
(4) Again connect the power cord to the AC outlet. Set an unlidded cassette on the main deck and select an operation mode with the OPERATION button.

2.1.3 Jigs and special tools for mechanism adjustment

For mechanism adjustment, the following jigs and special tools are required.

Note: For specifications of alignment tapes, refer to the section 3.1.4 "Alignment tapes".

Alignment tapes MHPE,MBPE-2,MBAE, MBAE-3,MBPE-X	Cassette torque meter PUJ42981	Parallel check plate PUJ50294(0.1)	Height gauge PGJ04029
			
Microchecker PUJ48712-2	**Option** SA-K723U		
			

- **General tools required besides above special tools**
  - Nut-driver (5.5mm)
  - Hex. key (1.27mm, 2.4mm)
  - Ordinary (+) screwdrivers [PGJ04037(3mm), PGJ04038(2.6mm)]

Table 2-1-1

2.2 PERIODIC REPLACEMENT OF MAIN PARTS

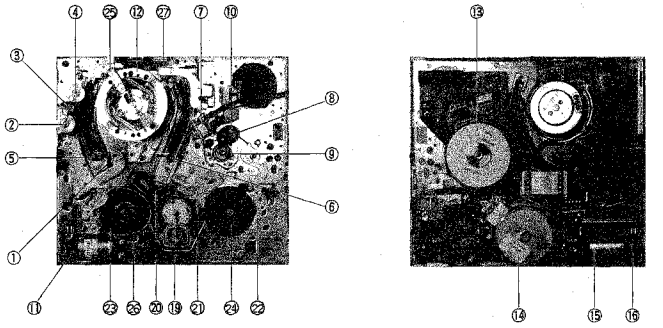
Periodic inspection and maintenance are needed in order to ensure performance and reliability. The following table has been compiled simply to give a general idea regarding maintenance and inspection.
In practice, the periods indicated will vary widely according to environmental and usage conditions. Also be aware that rubber parts may deform and age even when the equipment is not used. The upper drum life is particularly affected by environmental and usage conditions.

	No.	Part Name	Part No.	Standard service period ※ (operation hours)				Ref. section	Remarks
				1000	2000	3000	4000		
Tape transport system	①	Tension arm assy	PRD43785A				●	2.3.7 / 2.5.1	
	②	Impedance roller	PQ41955				●	2.6.2	
	③	Full erase head	PU57641-2				●	—	
	④	Roller assy	PQ43298A				●	—	
	⑤	SP. pole base assy	PRD43905A	★	★	★	●	—	
	⑥	T.U. pole base assy	PRD43323C				●	—	
	⑦	A/C head	PGZ01675				●	2.3.6	Excluding A/C head board
	⑧	T.U. guide pole Lower flange	PRD43741-01-01 PRD43740				●	2.6.3	
	⑨	Capstan shaft	—	★	★	★	★	—	
	⑩	Pinch roller	PQ42007B-2	○	●	○	●	2.3.12	
	⑪	Drum assy	PDV2185D	★	★	○	●	2.3.9	
	⑫	Upper drum assy	PDM2104B-9	●	●	●	(●)	2.3.4 / 2.3.5	Included in Drum assy
Driving system	⑬	Capstan motor	PGZ01668				●	2.3.13	
	⑭	Reel motor	PU58636W				●	2.3.15	
	⑮	Mode motor	PQ41996B				●	2.3.16	
	⑯	Mode belt	PQM30003-20		●		●	2.3.16	
	⑰	Cassette motor	PGZ01279				●	2.3.2	
	⑱	Cassette belt	PRD30022-15		●		●	2.3.3	
	⑲	Idler unit	PGZ01662		●		●	2.3.17	
	⑳	SP. main brake	PQ42019A-6		●		●	2.3.14	
	㉑	T.U. main brake	PQ42020B		●		●	2.3.14	
	㉒	T.U. sub brake	PQ42037A-2		●		●	—	
	㉓	SP. reel disk	PU59250-1-2				●	—	
	㉔	T.U. reel disk	PU56638-1-2				●	—	
Others	㉕	Brush assy	PRD44133A		●		(●)	2.3.4	Included in Drum assy
	㉖	Tension band assy	PQ41948A		●		●	2.3.7 / 2.5.1	
	㉗	Head cleaner	PRD40510-01-02	●	●	●	●	2.3.8	Not included in Drum assy

※ Know the standard service time by drum total hour meter. For the capstan motor and reel motor, perform service according to respective hour meters.

★=Cleaning.
○=Check and Replace if necessary, or Check and Clean.
●=Replacement
(●)=Included in Drum assy

2.2.1 Location of main parts



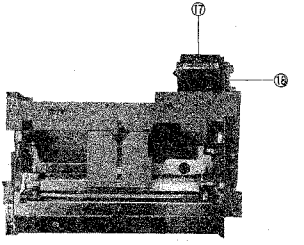


Fig. 2-2-1

2.2.2 Cleaning

Although periodical cleaning of parts of the tape transport system is desirable, it is almost impossible to put it into practice. Therefore, it is strongly recommended to clean the tape transport system when a set is brought in to undergo repair and check. For cleaning use fine woven cotton cloth moistened with ethyl alcohol.

(1) Dirty video heads get playback picture rough and invisible in the extreme case.
For cleaning the video head, lightly press cleaning cloth to the upper drum by finger while turning the drum.
Note: Since the video head is weak against vertical force (applied in the up-down direction), moving of cleaning cloth may possibly damage the video head.

(2) Dirty tape guides not only increase video heads in getting dirty much more but also cause damage to tape.
(3) Dirty and dusty brush causes horizontal snow noise in playback picture.

2.2.3 Oiling and greasing

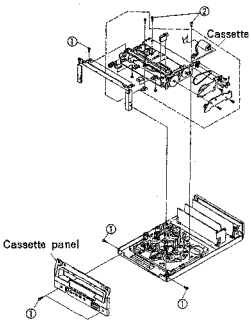
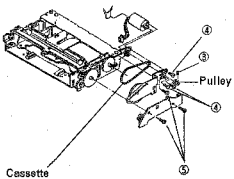
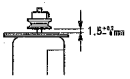
If oil or grease on the other party is old and dirty, wipe it off and apply new oil or grease to it, too.

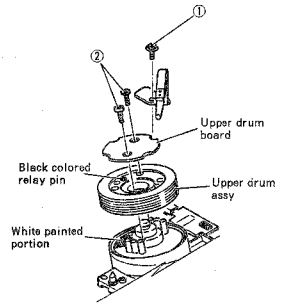
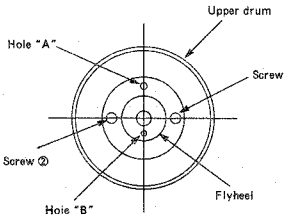
(1) Oil and grease used for this set are as follows.

Item	Name	JVC Part NO.
Oil	Cosmo Hydro HV56	COSMO-HV56
<General spindle oil (low viscosity) is substitutable>		
Grease	Moriton Grease (black)	MOS2-C

(2) Grease the control cam every 2000hours of operation.
(3) For other parts, apply grease to them every 4000hours of operation or taking an opportunity of parts replacement.

2-3 REPLACEMENT OF MAIN PARTS

No.	Item	Adjustment and Check
1	**Cassette housing assembly**  Fig. 2-3-1	(1) Remove six screws ① and detach the cassette panel from the cassette housing. (2) Remove two screws ②. (3) Disconnect the cassette housing connector, and pull the cassette housing assembly toward the front side while lifting it upwards for removing. (4) For reinstalling the cassette housing assembly, do it in the reverse order of removing.
2	**Cassette motor**  Fig. 2-3-2	(1) Disengage the cassette belt from the motor pulley. (2) Loosen the setscrew ③ and take out the motor pulley. (3) Remove three screws ④ and take out the cassette motor. (4) For reinstalling the cassette motor, do it in the reverse order of removing. (5) Referring to Fig. 2-3-3, install the motor pulley and tighten the setscrew ③ paying attention to the gap between the motor pulley and the motor bracket. (6) Engage the cassette belt with the motor pulley.  Fig. 2-3-3
3	**Cassette belt**	(1) See Fig. 2-3-2. (2) Remove three screws ④. (3) Remove three screws ⑤ and take out the gear bracket and the CASSETTE HOUSING board. (4) Replace the cassette belt with new one.

No.	Item	Adjustment and Check
4	**Upper drum assembly** **— Removal —**	***Note:*** ** When re-installing the upper drum assembly, put it right down on the lower drum assembly with care not to touch the heads.* ** For cleaning the heads, press fine woven cotton cloth moistened with alcohol to the drum head with fingers while turning the upper drum assembly counterclockwise. At that time, do not move cleaning cloth nor the upper drum vertically to each other.* (1) Remove one screw ① and take out the brush assembly. (2) Unsolder the upper drum and remove all solder dusts by a solder absorber, etc. (3) Remove two screws ②, then lift the upper drum together with the UPPER DRUM board upwards while removing the upper drum. Be very careful not to touch the drum head with fingers nor to damage it.
	 Fig. 2-3-4	
	— Reinstallation —	(1) Clean the contact surfaces of the upper drum assembly and the lower drum assembly with alcohol. (2) Install the upper drum assembly so that the hole "A" of the upper drum assembly and the hole "B" of the flywheel are positioned to each other at an angle of 180° . (3) Tighten two screws ② evenly. (4) Check right centering of the upper drum. (See 2.3.5.) (5) Put the UPPER DRUM board on the upper drum assembly and solder the board. (6) Clean the drum assembly on the whole (particularly the upper drum). (7) Reinstall the brush assembly as it was.
	 Fig. 2-3-5	
	— Check and Adjustment —	(1) Check FM waveform. (See 2.7.2) (2) Check X-value. (See 2.7.5.) (3) Adjust switching point. (See 3.2.1.) (4) Adjust the video circuit. (See 3.6 and No.⑤ of 3.5.8.) (5) Adjust the FM audio circuit. (See 3.4, item No. 4, 6, 7 and 8.)

No.	Item	Adjustment and Check
5	**Centering of upper drum** **If the upper drum is so installed as its center is off the center of the drum shaft, it causes jitters and other troubles. When the upper drum assembly is replaced, make sure to confirm that the centering is right aligned according to the following procedure.**	

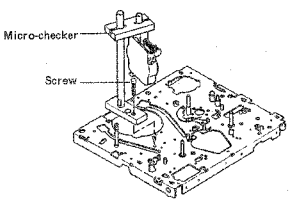


Fig. 2-3-6

Cautions to handle microchecker

① Keep the microchecker out of any shock or vibration since it is high precision instrument.

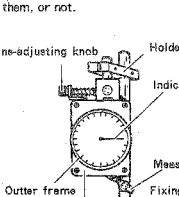
② Do not apply unnecessary force to the probe.

③ Although the outer ring of the micrometer is turnable approximately in a range of ± 10 graduations, do not turn it with strong force (more than 300g-cm).

④ Be careful not to touch the probe with video heads directly.

⑤ When setting the microchecker, make sure that the probe always orientates the center of the drum for working.

⑥ If rubbing or grating sound occurs in measuring, it results from abnormal contact of the probe. In such a case, check the upper drum and the tip of the probe whether dust or other contamination is on them, or not.



Microchecker : PUJ49712-2

Note: For adjusting the upper drum in the centering, it is required to prepare a screw SDST3006Z to set a microchecker.

(1) Remove the upper stay of the cassette housing assembly.

(2) Apply opaque tape or the like onto the cassette LED (red LED in the center of the deck) to shut off infrared rays.

(3) Turn on the power switch and set the mechanism to the Play mode. When the mechanism enters the loading end state, turn off the power.

(4) Prepare a microchecker and remove a hexagon head screw from its base.

(5) Fix the microchecker's base with a screw SDST3006Z at the position shown in Fig. 2-3-6.

(6) Carefully set the micrometer not to knock it against the upper drum.

(7) Slowly turn the micrometer's fine-adjusting knob clockwise until the indicator reads "0". The outer ring is usable for this adjustment in a range of ±10graduations at maximum. Do not turn it further than this range.

(8) Being very careful not to apply any lateral pressure to the upper drum, turn it gently (with a paper string, for example). At that time, it is a minimum requirement that the pointer shakes in a range of ±1micron.

(9) If the pointer shakes more than ±1micron, turn the micrometer's fine-adjusting knob counterclockwise to release the probe from contact. Loosen two screws retaining the upper drum while fine adjusting the setting position of the upper drum, then tighten the screws again.

(10) Again check deflection in the center of the upper drum and adjust the centering until the micrometer's pointer just shakes in a range of ±1micron.

(11) Turn the microchecker's fine-adjusting knob counterclockwise, then remove it.

(12) Remove the tape (or the like) that was applied in the above step (2).

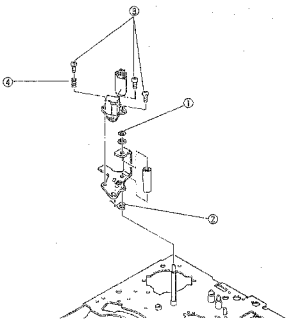
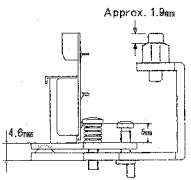
(13) Set the alignment tape MHPE and connect an oscilloscope's probe with TP4 on [9][5]VIDEO PRE/REC board while connecting its other probe with TP1 (D. FF) on [9][5]VIDEO PRE/REC board for external trigger.

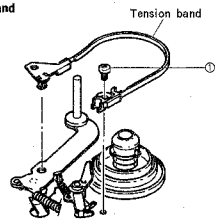
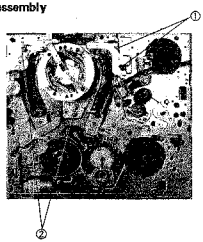
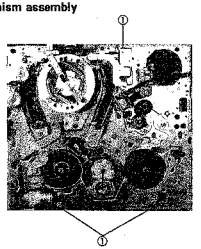
(14) Turn on the power switch and set the mechanism to the Play mode with the remote controller.

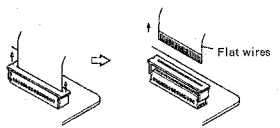
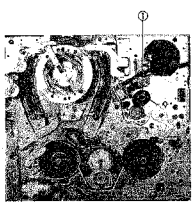
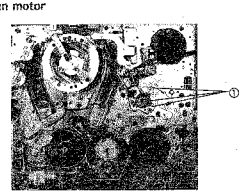
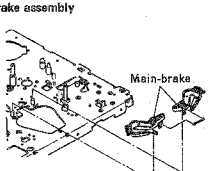
(15) Adjust the tracking control to confirm that waveforms of CH-1 and CH-2 simultaneously become maximum.

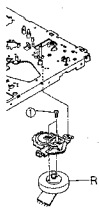
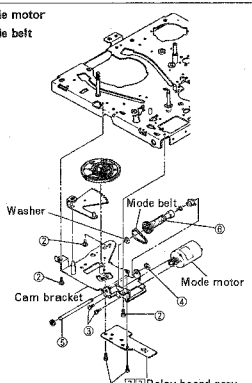
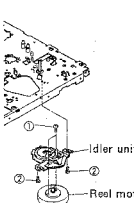
(16) When they extremely differ from each other in the level or time, remove the upper drum to clean its bottom surface and the upper surface of the lower drum's flywheel. After reinstalling the upper drum, repeat the above steps (2) through (15).

(17) Fit the upper stay to the cassette housing assembly.

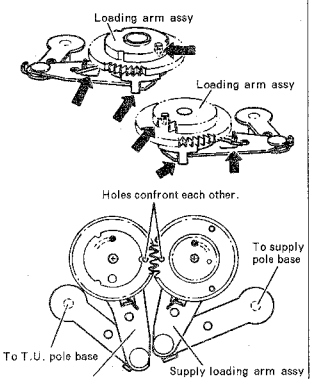
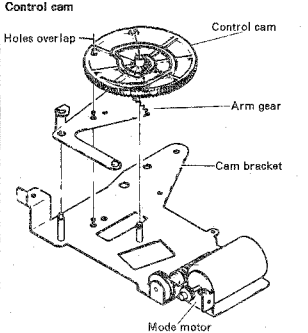
No.	Item	Adjustment and Check
6	A/C head assembly — Removal —	(1) Required tool: •Nut-driver : 5.5mm (2) Remove a hexagon nut ①, then remove the A/C head together with the head base with care of a spring ② not to lose it. (3) Remove soldering from the A/C HEAD board. (4) Remove three screws ③ and detach the A/C head from the head base with care of a spring ④ not to lose it.
	 Fig. 2-3-7	
	— Reinstallation —	(1) Reassemble the A/C head and the peripheral parts in the reverse order of removing. (2) Before setting the A/C head on the main deck, temporarily adjust the height of the A/C head as shown in Fig. 2-3-8.
	 Fig. 2-3-8	
	— Check and Adjustment —	(1) A/C head adjustment (see 2.7.4). (2) X-value adjustment (see 2.7.5). (3) Adjust the normal audio circuit (see 3,3).

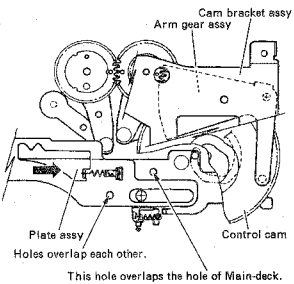
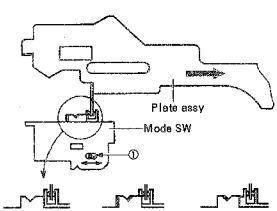
No.	Item	Adjustment and Check
7	**Tension band**  Fig. 2-3-9	(1) Remove a screw ① and pull the tension band out of the tension arm. (2) Install a new tension band in the reverse order of removing. (3) Check the position of the tension pole (see 2.5.1).
8	**Head cleaner**	(1) Press down the cleaner (sponge) a little while taking it out with care not to damage the upper drum. (2) Replace it with a new cleaner in the reverse order of removing.
9	**Drum assembly**  Fig. 2-3-10	(1) Remove two screws ① and take out the head cleaner assembly. (2) Remove two screws ② and disconnect connectors from the drum assembly, then remove the drum assembly. (3) Install a new drum assembly for replacement in the reverse order of removing. (4) Clean the drum on the whole. (5) After replacement of the drum assembly, make sure to check and adjust the following items referring to relating sections. ① FM waveform check (see 2.7.2). ② X-value check (see 2.7.5). ③ Switching point adjustment (see 3.2.1). ④ Video circuit adjustment (See 3.6 and No.⑤ of 3.5.8). ⑤ FM audio circuit adjustment. (See 3.4, item No. 4, 6, 7 and 8.)
10	**Mechanism assembly**  Fig. 2-3-11	(1) Take off the cassette panel and remove the cassette housing assembly (see 2.3.1). (2) Remove the head cleaner assembly (see 2.3.9). (3) Remove the VIDEO PRE/REC board (see 1.2). (4) Disconnect the flat wires from the DECK TERMINAL board (see 2.3.11). (5) Remove three screw ① and take out the main deck assembly.

No.	Item	Adjustment and Check
11	**Flat wires**  Fig. 2-3-12	(1) For disconnecting and connecting flat wires, lift the connector's wire holder upward by the both sides as shown in Fig. 2-3-12.
12	**Pinch roller**  Fig. 2-3-13	(1) Remove one screw ① and lift the pinch roller upwards to remove it. (2) For replacement, set a new pinch roller in the reverse order of removing.
13	Capstan motor  Fig. 2-3-14	***Note: • This need not to take out the main deck assembly.*** ***• Be careful not to damage the capstan.*** (1) Remove the upper stay of the cassette housing. (2) Remove the pinch roller (see 2.3.12). (3) Remove three screws ① and disconnect connectors, then replace the capstan motor. (4) Install the pinch roller. (5) Install the upper stay of the cassette housing.
14	**Main brake assembly**  Fig. 2-3-15	***Note: This need not to take out the main deck assembly.*** (1) Lift the main brake assembly upwards with nippers or the like while taking it out. (2) For replacement, install a new main brake assembly in the reverse order of removing.

No.	Item	Adjustment and Check
15	**Reel motor**  Fig. 2-3-16	(1) Take out the cassette housing assembly (see 2.3.1). (2) Remove the main deck assembly (see 2.3.10). (3) Remove two screws ① and solders to replace the reel motor.
16	**Mode motor** **Mode belt**  Fig. 2-3-17	(1) Take out the main deck assembly (see 2.3.10). (2) Remove two screws ①, then take out the relay board. (3) Remove three screws ②, then take out the cam bracket assembly. (4) Remove two screws ③, then take out the mode motor. (5) For replacement, install a new mode motor in the reverse order of removing. (6) Remove a slit washer ④, then pull out the shaft ⑤. (7) Remove the worm gear Ⓔ and replace the mode belt. (8) Engage a new mode belt in the reverse order of disengagement. (9) Reassemble the cam bracket assembly to the main deck referring to the reassembling procedure of the mechanism (see 2.4).
17	**Idler unit**  Fig. 2-3-18	(1) Take out the cassette housing assembly (see 2.3.1). (2) Take out the main deck assembly (see 2.3.10). (3) Remove two screws ①, then do the reel motor. (4) Remove two screws ② and replace the idler unit.

2.4 REASSEMBLING OF MECHANISM

No.	Item	Adjustment and Check
	There is a close relation between the mode select switch (slide switch) and the syscon circuit in the mechanism of this model, and mechanical operations of levers, gears, rollers and others mechanism parts are controlled by the condition of connection between the mode select switch and the control arm. Therefore, if those mechanism parts are incorrectly set, the mechanism may fall into malfunction.	
1	**Loading arm**  Fig. 2-4-1	(1) The loading arm assembly is composed of the loading gear, torsion spring and loading arm. (2) Assemble the loading arm assembly properly referring to Fig. 2-4-1. (3) When assembling the take-up loading arm assembly and the supply loading arm assembly, engage their gears so that the holes of them face each other. After they are assembled as shown in Fig. 2-4-1, leave them in that state for proceeding to further work.
2	**Control cam**  Fig. 2-4-2	(1) Assemble the arm gear and the control cam to the cam bracket assembly so as to accord respective holes of the cam bracket assembly, arm gear and control cam with each other. (2) After they are assembled in the above-mentioned state, leave them as they are for further work.

No.	Item	Adjustment and Check
3	**Cam bracket assembly**  Fig. 2-4-3	(1) Push the plate assembly rightwards to keep it in the position that its hole accords with the hole of the main deck. (2) Then, install the cam bracket assembly.
4	**Mode select switch**  Fig. 2-4-4	***Note: This adjustment is needed when the mode select switch was removed once or its setting position is changed.*** (1) Engage the plate assembly and the mode select switch with each other as shown in Fig. 2-4-4, then tighten the screw ① so lightly as the mode select switch can be moved sidewards. (2) Press the plate assembly rightwards so as to accord the holes shown in Fig. 2-4-3 with each other, and fix them temporerily with a precision screwdriver or the like. (3) If the cam bracket is already installed, turn the mode motor to accord the holes. (4) Move the mode select switch sidewards in order to align the upper and lower notches on a straight line, and tighten the screw ① to fix the switch. (5) After removing the precision screwdriver, etc., install the DECK TERMINAL board and solder it.

2.5 TAPE TENSION ADJUSTMENT

No.	Item	Adjustment and Check
1	**Tension pole position adjustment (back tension)**	(1) **Required instrument for this adjustment:** •Cassette torque meter (PUJ42881) (2) In the mechanism mode that the power switch is turned off and cassette tape is ejected, apply black tape or the like to the LED in the center of the deck to shut off infrared rays. (3) Turn on the power and set the mechanism to the Play mode without any cassette tape loaded. Again turn off the power and get the cassette housing to enter the intake state by hand. At that time, no cassette tape is loaded. (4) Loosen the screw ① a little and adjust the tension band holder in the position so that there is no gap (0mm) between the cutout of the main deck and the tension arm. (5) Tighten the screw ① to fix the tension band holder. (6) Remove the tape applied in the above step (2) and turn on the power. (7) Mount a cassette torque meter and set the mechanism to the Play mode. (8) Confirm that the torque meter reads 45-55g-cm as the supply torque. (9) If the torque meter reads otherwise, clean the supply reel disk in the part that contacts the tension band and check the spring of the tension arm. (10) After completing the above adjustment, apply screw sealant to the tension band holder.
2	**Take-up torgue adjustment**	***Note: This adjustment requires a display unit (SA-K723U).*** (1) ***Required instruments for this adjustment:*** •Cassette torque meter (PUJ42881) •Display unit (SA-K723U) (2) Mount a cassette torque meter and set the mechanism to the Play mode. (3) Confirm that the torque meter reads 90-110g-cm as the take-up torque. (4) If the torque meter reads otherwise, proceed to the following adjustments. ① Connect a display unit with their switches set as follows. A/B SELECT switch : Select a unit appropriately for the adjustment. ID/H. M. SELECT switch : Set to ID. ② Mount a cassette torque meter and set the mechanism to the REC mode. ③ Adjust the UP and DOWN switches of the display unit so that the torque meter reads 100g-cm as take-up torque. ④ After the above adjustment finishes, press the ENTER switch.

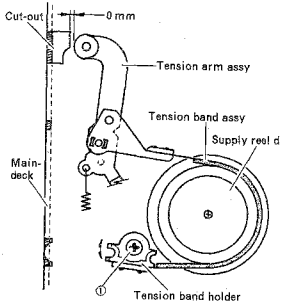
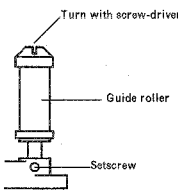
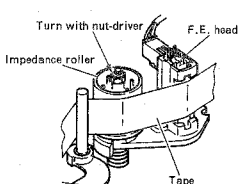
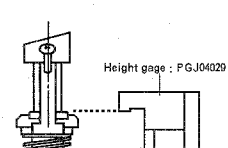


Fig. 2-5-1

2.6 ADJUSTMENT OF TAPE TRANSPORT SYSTEM

No.	Item	Adjustment and Check
	The tape transport system generally has no need of adjustment since it has been precisely adjusted at the factory before shipment. Check and adjustment are required only after the set is used for a long time and parts of the tape transport system are replaced.	
1	**Guide rollaer**  Fig. 2-6-1	(1) To make FM waveform be good at linearity, it is required to adjust the height of the guide roller. (2) Loosen the setscrew (1.27mm) under the guide roller. If the setscrew is loosened too much, it may cause unstable tape transport and impossibility of adjustment at the worst. (3) Adjust the height of the guide roller with an ordinary (−) screwdriver.
2	**Impedance roller**  Fig. 2-6-2	(1) After the position of the supply guide roller is adjusted right, adjust the height of the impedance roller. (2) Turn the nut at the top of the impedance roller with a box-driver (5.5mm) in order to adjust so that tape smoothly runs on the lower flange.
3	**TU guide pole**  Fig. 2-6-3	(1) Precisely adjust the height of the take-up guide pole with a height gauge (PGJ04029).

2.7 INTERCHANGEABILITY ADJUSTMENT

No.	Item	Adjustment and Check
	Interchangeability must be adjusted after replacement of the upper drum assembly, drum assembly and A/C head assembly, etc.	
1	Names of main parts	

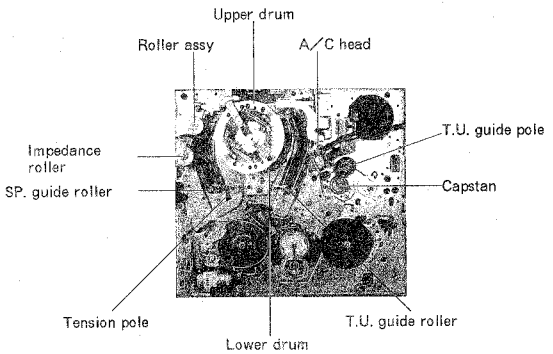


Fig. 2-7-1

No.	Item	Adjustment and Check
2	FM waveform check	***Note: Before loading any alignment tape, make sure to confirm nothing wrong in tape transport with an ordinary tape.***

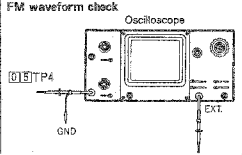


Fig. 2-7-2

(1) For observing FM waveform, connect an oscilloscope with TP4 on 0 5 VIDEO PRE/REC board while connecting the other probe with TP1 on 0 5 VIDEO PRE/REC board for triggering it externally.

(2) Play back the alignment tape MBPE-2 while turning the tracking control to maximize FM waveform. Referring to Fig. 2-7-3, check whether rate of each level to the maximum level "a" is as specified or not.

(3) When the maximum level "a" is set for 4 scale divisions on the oscilloscope screen, "b" must be more than 3.4 scale divisions while "c" and "d" must be more than 3.0 scale divisions.

(4) To set the maximum level "a" for 4 scale divisions, adjust the gain control of the oscilloscope in addition to the tracking control that is set to maximum position.

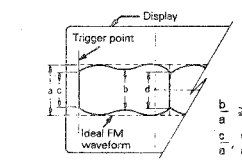
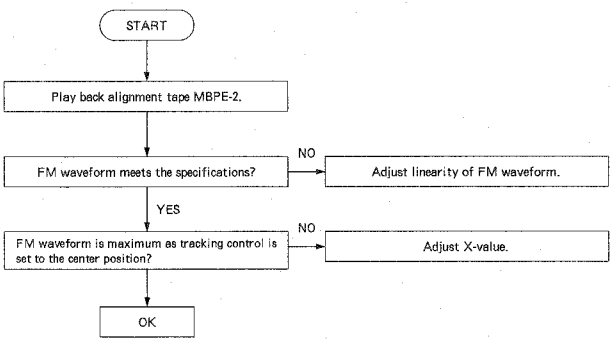


Fig. 2-7-3

No.	Item	Adjustment and Check



3 **Interchangeability adjustment**

— Linearity adjustment —

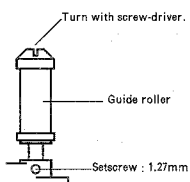
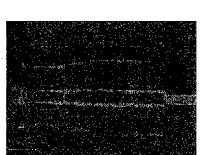


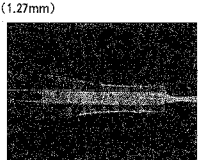
Fig. 2-7-4



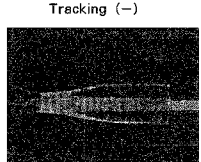
Tracking center

(1) **Precautions for adjustment:**

- For interchangeability adjustment, play back the alignment tape MBPE-2.
- If FM dropout cannot be corrected by adjusting the guide roller, it needs to replace the drum assembly. This replacement should apply only to the case that waveforms of CH-1 and CH-2 have the same tendency when play back the alignment tape MHPE.
- The following pictures show FM waveforms when the lower drum is worn.
- Required tool:
  Hex. key (1.27mm)



Tracking (−)



Tracking (+)

No.	Item	Adjustment and Check

MBPE-2

Observe FM waveform.

Turn the tracking control to make break of the waveform easy to see.

Turn the guide roller to flatten the waveform.

Decline waveform output approximately to 2/3 of the maximum with the tracking control.

Turn the guide roller counterclockwise to raise the waveform in the both sides.

Lower the guide roller gradually and stop the lowering just before the both sides of the waveform are flattened.

Ordinary recording tape

Record stairstep signal on an ordinary tape and pley it back to observe FM waveform.

Very waveform output with the tracking control while confirming no change in the linearity.

NG

OK

Proceed to the X-value adjustment.

No.	Item	Adjustment and Check
4	**A/C head adjustment** **If the A/C head is improperly positioned, it results in dropdown of output level or poor S-N ratio in playback audio signal, moreover, misaligned servo without picking-up of control signal at the worst.**	

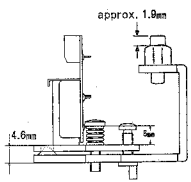


Fig. 2-7-5

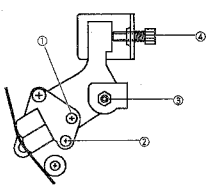


Fig. 2-7-6

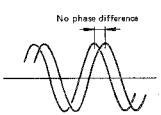


Fig. 2-7-7

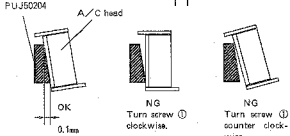


Fig. 2-7-8

(1) **Required implements:**
- Nut-driver : 5.5mm
- Alignment tapes : MBAE-3, MHPE, MBAE
- Parallel check plate : PUJ50204 (0.1)

(2) **Rough check of A/C head height before adjustment**
① In the stage of tape transport check before height adjustment, temporarily adjust the height of the A/C head in order to prevent alignment tape from damage as well as to perform adjustment with ease.

(3) **Tilt (forward bent) adjustment**
① Adjust the screw ① with the parallel check plate (PGJ50204) so that tilt of the A/C head is 0.1mm. If there is a gap above the A/C head (this is interpreted as a little tilt), tighten the screw ① to increase the tilt of the A/C head.
On the other hand, if there is a gap underneath the A/C head, loosen the screw ① to decrease the tilt.

② Confirm that tape is neither damaged nor wrinkled around the lower flange of the take-up guide pole. If tape is wrinkled, fine adjust the height of the take-up guide pole.

(4) **Height and azimuth adjustments**
① Connect an oscilloscope's CH-1 with TP15 on [0][7] NORMAL AUDIO board while connecting CH-2 with TP16, and set it to the chop mode.

② Play back the alignment tape MBAE-3 while adjusting the A/C head height with the hex. nut ③ to minimize both output levels of CH-1 and CH-2. **(Height adjustment)**

③ Play back the alignment tape MHPE while adjusting the screw ② so that CH-1 and CH-2 output waveforms accord with each other in the phase and their outputs become maximum. **(Azimuth adjustment)**

④ Repeat the above steps No.② and No.③ alternately for more precise adjustment.

(5) **Azimuth check**
① Connect the oscilloscope's CH-1 with TP15 on [0][7] NORMAL AUDIO board while connecting CH-2 with TP16, and set it to the chop mode.

② Play back the alignment tape MBAE while confirming no phase difference (less than 0.1msec) between CH-1 and CH-2 output waveforms. If phase difference is more than 0.1msec, repeat the above step (4) for readjustments of height and azimuth of the A/C head.

(6) **A/C head parallel check**
① Confirm that tilt of the A/C head is less than 0.1mm with the parallel check plate (PUJ50204).

② If it is out of the specifications, repeat the above steps (3) through (5).

No.	Item	Adjustment and Check
5	**X-value adjustment** **If X-value is adjusted improperly, it results in time lag between picture and normal sound in playback of a tape that is recorded with a set whose X-value is correctly adjusted.**	

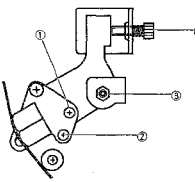


Fig. 2-7-9

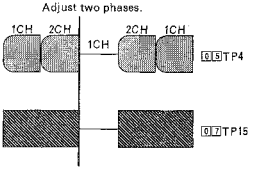


Fig. 2-7-10

• Manner of external synchronization:

① Set the oscilloscope's time sweep to 10msec.

② In the condition that the oscilloscope is synchronized with D. FF signal, turn the oscilloscope's HOLD OFF control in the direction of (+) to stabilize non-recorded part.

(1) **Required implements:**
Hex. key : 2.4mm
Alignment tapes : MBPE-X, MHPE

(2) **Preparation**

① Connect CH-1 of the oscilloscope with TP4 on 05 VIDEO PRE/REC board while connecting CH-2 with TP15 on NORMAL AUDIO board 07.

② Trigger the oscilloscope externally with signal from TP5 (D. FF) on 06 SERVO board.

③ Record the signal and play it back to confirm that FM waveform is maximum with the tracking control set to the center position. If not, repeat the tracking preset adjustment (see 3.2.5).

④ Set the tracking control to the center position.

(3) Play back the alignment tape MBPE-X.

(4) Adjust the S.bolt ④ to maximize FM output and to accord phases of audio and FM signals with each other in their non-recorded parts.

(5) Play back the alignment tape MHPE while confirming that FM waveform is maximum with the tracking control set to the center position.

(6) If the result of the above step (5) is unsatisfactory, move the A/C head to obtain the maximum FM waveform at a point the nearest the position of the above step (4).

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 PRECAUTIONS

- Before proceeding to any electrical adjustment, it is the first prerequisite to confirm that the objective item is out of order or of breakdown.
  Moreover, for parts and items that need correct mechanical adjustment prior to electrical adjustment, begin by confirming that they are exactly mechanically adjusted.
- Make sure to start electrical adjustment 5 or more minutes after the power is turned on.

3.1.1 Required tools and test instruments

- Frequency counter (10MHz or more and 100mV or less in the sensitivity)
- Video signal generator (TG-7/2, Model 1411 or equivalent)
- Sweep signal generator (100kHz to 10MHz, or equivalent)
- Oscilloscope
- TV monitor
- Vectorscope (521A or equivalent)
- Audio tester

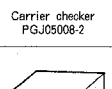
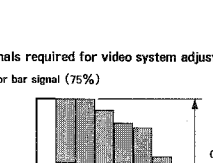
Alignment tapes MHPE,MHVE-2,MBAE, MH-8,MH-F8,MBAFE-2	Carrier checker PGJ05008-2
	

Fig. 3-1-1 Required special implements

3.1.2 Signals required for video system adjustment

1. EBU color bar signal (75%)



To be used for Y/C level adjustment.
All color levels appearing in this chapter are measured or to be measured with this color bar signal. Make sure not to use other color bar signals such as of 100% in the color level, since it leads to different and wrong measurement results.

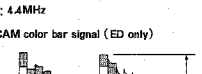
2. Stairstep signal

To be used for linearity adjustment.

3. Sweep signal

To be used head resonance adjustment.
MAKER : 4.4MHz

4. EBU SECAM color bar signal (ED only)



3.1.3 Initial setting of switches and VRs

Unless otherwise directed, perform checks and adjustments with switches and VRs being initialized as shown below.

- NORM and Hi-Fi INPUT LEVEL VR : CENTER click
- TRACKING VR : CENTER click
- DIP SW (P-ROM & SW board)

1-1 : ON
1-2 : OFF
1-3 : ON
1-4 : OFF
1-5 : OFF
1-6 : OFF
1-7 : OFF
1-8 : ON

2 : ON (CENTER)

3-1 : ON
3-2 : OFF
3-3 : OFF
3-4 : OFF
3-5 : ON
3-6 : ON
3-7 : ON

4,5 : 00

3.1.4 Specification of alignment tapes

•MHPE
•MBPE-2(Only CH-1 recording)

Video signal	Audio signal	Application	Remark
VHS SP mode Stairstep	6kHz	•Check and adjustment of interchangeability. •For adjustment of PB switching point.	MH-2 stairstep signal substitutable.

•MHVE-2

Video signal	Audio signal	Application	Remark
VHS SP mode Color bar	–	For check and adjustment of video PB circuit.	MH-2 color bar signal is substitutable.

•MBAE(MHAE)

Video signal	Audio signal	Application	Remark
CTL signal only	1kHz(0dB)	For check and adjustment of audio PB circuit.	MH-2 1kHz signal is substitutable.

•MH-8

No.	PB time	Video signal	Audio signal	Application
1	2 minutes	Color sweep	400Hz(−20dB)	•Check and adjustment of video signal's frequency response in PB circuit. •Check and adjustment of audio signal's frequency response in PB circuit.
2	2 minutes	Color sweep	100Hz(−20dB)	
3	2 minutes	Color sweep	8kHz(−20dB)	
4	4 minutes	Color sweep	–	

•MH-F8

No.	PB time	Video signal	Audio signal	Application
1	5 minutes	–	Carrier only	Check and adjustment of interchangeability of mechanism.
2	5 minutes	Stairstep	Carrier only	Check and adjustment of interchangeability of mechanism.
3	5 minutes	–	1kHz (±50kHz DEV)	Check and adjustment of FM audio PB circuit.

•MBAFE-2

Video signal	Audio signal	Application	Remark
Carrier only (4.3MHz)	1kHz (±50kHz DEV)	For check and adjustment of FM audio PB circuit.	Reference RF level of FM Audio.

•MBAE-3

Video signal	Audio signal	Application	Remark
–	1kHz (Guard band recording)	For rough adjustment of stereo A/C head height.	Only MHAE-3 part name changed.

•MBPE-X

Video signal	Audio signal	Application	Remark
Stairstep (1 field no-recording every 5 frames.)	7kHz	For rough adjustment of X-value.	Only MHPE-X part name changed.

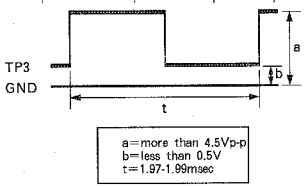
3.2 SERVO CIRCUIT

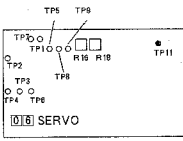
Note: Unless otherwise specified, all check points and adjustment parts are located on [016]SERVO board.
When adjusting those items, perform it for the both units (A) and (B).

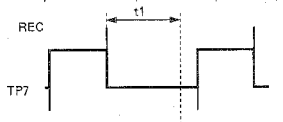
No.	Item	Check Point	Adjustments	Signal	Mode	Description
1	**SWITCHING POINT**	-7020EP- VIDEO OUT TP5 TRIG.	R16	MHPE	PB	For BR-7020EP (1) Connect an oscilloscope's probe to the VIDEO OUT. (2) Connect the other probe of the oscilloscope to TP5(D.FF) for triggering it externally. (3) Play back the MHPE alignment tape while adjusting R16 so that the switching point is 6.5H before the V.sync.
						TP1 R16 R18 TP11 TP2 TP5 [016] SERVO
		-E/ED- TP4 [015] TP5 TRIG.				For BR-7020E/ED ***Note: This adjustment has need of a carrier checker (PGJ05008-2).*** (1) Make a connection between the oscilloscope and the carrier checker with the 10:1 probe. (2) Set the carrier checker to the "CARRI" mode. (3) Play back the MHPE alignment tape while adjusting R16 so that the switching point is 6.5H before the V.sync.
2	**CTL PULSE check**	TP2 TP5 TRIG.	–	MHPE	PB	(1) Connect a probe of the oscilloscope to TP5(D.FF) for triggering it externally. (2) Connect the other probe of the oscilloscope to TP2 and confirm that the positive pulse (a) shown in the left figure is 0.5Vp-p or more. (3) When there is an incoming noise (b) etc. other than the control pulse, confirm that its level is less than 0.1Vp-p. (4) The relation between the time axes of the positive pulse and the negative pulse is as shown on the left (t1>t2).
		a >0.5Vp-p b <0.1Vp-p t1>t2		Stairstep	REC/PB	(5) Record a stairstep signal and play it back. (6) Confirm that the level of (a) is 0.5Vp-p or more in the same manner as the above step (2).
3	**DRUM FG/PG check**	TP1 TP5 TRIG.	–	COLOR BAR	REC	(1) Trigger the oscilloscope externally with the signal of TP5(D.FF). (2) Connect the other probe to TP1 and confirm that the waveform is as shown on the left. a=more than 4.0Vp-p b=2.0-2.8V c=less than 0.5V t=5.8msec

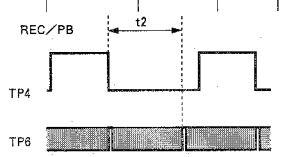
Note: Unless otherwise specified, all check points and adjustment parts are located on [016] SERVO board.

No.	Item	Check Point	Adjustments	Signal	Mode	Description
4	CAPSTAN FG check	TP3	–	COLOR BAR	REC	(1) Connect the oscilloscope to TP3 and confirm that the waveform is as shown on the left.
5	TRACKING PRESET	TP6 TP7	–	COLOR BAR	REC	(1) Connect the CH-1 of the dual-trace oscilloscope to TP6 while connect the CH-2 to TP7. (2) Set the tracking control to the center detent position. (3) Set the deck to the REC mode to record the signal while observing the waveform with internal trigger by TP7's siganl. (4) Observe the waveform and take note of the period of time t1 between the fall point of TP7's signal and V.sync of TP6's signal.
		TP6 TP4	R18	–	REC/PB	(5) Connect the CH-1 of the oscilloscope to TP4. (6) Play back the signal recorded in the above step (3) and observe the waveform with internal trigger by TP4's signal. (7) Observing the waveform, adjust R18 so that the period of time t2 between the fall point of TP4's signal and V. sync of TP6's siganl becomes the same as t1 in the above step (4). t1=t2







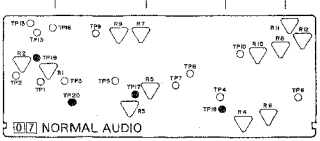


TRAC PRESET	t1=t2	⊘R18

3.3 NORMAL AUDIO CIRCUIT

Note: Unless otherwise specified, all check points and adjustment parts are located on [07]NORMAL AUDIO board. When adjusting those items, perform it for the both units (A) and (B).

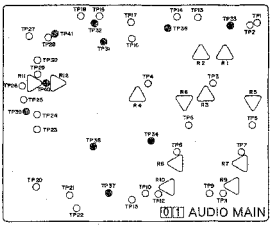
No.	Item	Check Point	Adjustments	Signal	Mode	Description
1	E-E level	TP15(Lch) TP16(Rch) ↓ Audio tester	R1(Lch) R2(Rch)	1kHz/ −6.0dBs	E-E	(1) Set the NORMAL INPUT LEVEL VR to the center detent position. (2) Connect an audio tester to TP15(TP16) and adjust R1(R2) so that the level is −6.0 dBs.
2	PB frequency response	TP15(Lch) TP16(Rch) ↓ Audio tester	R3(Lch) R4(Rch)	MH-8	PB	(1) Play back the 400Hz segment of the MH-8 alignment tape while measuring the output level of TP15(TP16) to regard it as the reference (0dB). (2) Next, play back the 8kHz segment of the MH-8 alignment tape while adjusting R3(R4) so that the output level is 0.0dB compared with the above-mentioned standard level.
3	PB level	TP15(Lch) TP16(Rch) ↓ Audio tester	R5(Lch) R6(Rch)	MBAE	PB	(1) Play back the MBAE alignment tape while adjusting R5(R6) so that the output level is −9.0dBs.
4	REC/PB frequency response	TP15(Lch) TP16(Rch) ↓ Audio tester	R11(Lch) R12(Rch)	1kHz/ 8kHz/ −26dBs	REC/PB	(1) Record 1kHz and 8kHz signals and play them back later. (2) Regard the playback level of the 1kHz signal as the reference (0dB) while adjust R11(R12) so that the playback level of the 8kHz signal is 0.0±0.5dB.
			R9(Lch) R10(Rch)	1kHz/ 12kHz/ −26dBs	REC/PB	(3) Record 1kHz and 12kHz signals and play them back later. (4) Regard the playback level of the 1kHz signal as the reference (0dB) while adjusting the playback level of the 12kHz signal to be 0.0±0.5dB by R9(R10).
5	REC level	TP15(Lch) TP16(Rch) ↓ Audio tester	R7(Lch) R8(Rch)	1kHz/ −6.0dBs	REC/PB	(1) Record a 1kHz/−6.0 dBs signal and play it back. (2) Confirm that the playback level of the signal is −6.0dBs. (3) If not, again check the PB level adjustment of the Item No.3 mentioned above. (4) After confirming the PB level, adjust R7(R8) before recording so that the playback level is −6.0dBs.

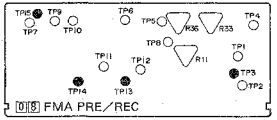


3.4 Hi-Fi AUDIO CIRCUIT

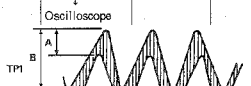
Note: Unless otherwise specified, all test points and adjustment parts are located on [011]AUDIO MAIN board.

No.	Item	Check Point	Adjustments	Signal	Mode	Description
1	**E-E level & METER**	TP13(Lch) TP14(Rch) TP25(Lch) TP26(Rch) ↓ Audio tester	R1(Lch) R2(Rch) R11(Lch) R12(Rch)	1kHz／ −6.0dBs	E-E	(1) Set the Hi-Fi INPUT LEVEL VR to the center detent position. (2) Adjust R1(R2) so that output level at TP13 (TP14) is −6.0dBs. (3) Adjust R11(R12) so that output level at TP25 (TP26) is −8.0dBs.
2	**CARRIER frequency**	TP9(Lch) TP10(Rch) ↓ Frequency counter	R7(Lch) R8(Rch)	no signal	E-E	(1) Adjust R7 so that the frequency measured at TP9 is 1.400±$^{0.03}_{0.03}$MHz. (2) Adjust R8 so that the frequency measured at TP10 is 1.800±$^{0.03}_{0.03}$MHz.
3	**REC level**	TP9(Lch) TP10(Rch) ↓ Oscilloscope	R9(Lch) R10(Rch)	no signal	E-E	(1) Connect a probe of the oscilloscope to TP9(TP10) and adjust R9(R10) so that the signal level becomes 0.6Vp-p.
4	**PB RF level**	TP7[018] ↓ Oscilloscope	R11[018]	MBAFE-2	PB	(1) Play back the MBAFE-2 alignment tape. (2) Adjust the tracking control to maximize the output level. (3) Adjust R11 so that the FM level becomes 90mVp-p.





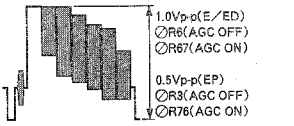
Note: Unless otherwise specified, all test points and adjustment parts are located on [01] AUDIO MAIN board.

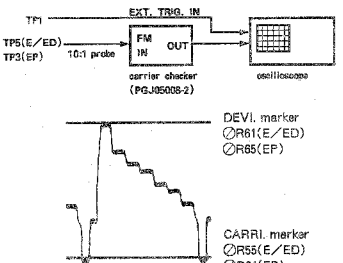
No.	Item	Check Point	Adjustments	Signal	Mode	Description
5	REC FM level	TP1 TP3(GND) [01][8] ↓ Oscilloscope  A : 50mVp-p(R33) B : 200mVp-p(R36)	R33(Lch) R36(Rch) [01][8]	no signal	REC	(1) Turn R33 and R36 fully clockwise. (2) Turn R33 slowly counterclockwise until the 1.4MHz signal level "A" is 50mVp-p. (3) Next, turn R36 slowly counterclockwise until the mixed waveform level "B" is 200mVp-p.
6	PB level - Only the 7020EP -	Hi-Fi OUT A ↓ Audio tester	R3(Lch) R4(Rch)	MH-F8 or MBAFE-2	PB	(1) Play back the MH-F8 alignment tape. (2) Adjust the output level to be −6.0dBs by turning R3(R4).
7	DEVIATION	- BR-7020EP - Hi-Fi OUT A ↓ Audio tester - BR-7020E/ BR-7020ED - Standard play-back machine	R5(Lch) R6(Rch)	1kHz/ −6.0dBs	REC/PB	- BR-7020EP - (1) Record a 1kHz/−6.0 dBs signal and play it beck while adjusting R5(R6) to obtain −6.0dBs as the output level before recording. - BR-7020E/BR-7020ED - ***Note: This adjustment has need of the standard playback machine.*** ***Use an appliance which is completely adjusted, since adjusting level is checked up by its FM audio PB level adjustment.*** (1) Record a 1kHz/−6.0dBs signal. (2) Use a standard playback machine, playback and confirm PB level of −6.0±0.5dBs. (3) If the level is out of specifications, adjust R5(R6) subtly and then repeat the above steps (1) and (2).
8	REC/PB RF level	TP7[01][8] ↓ Oscilloscope	R33[01][8]	no signal	REC/PB	***Note: Make sure to adjust of this adjustment after the VIDEO PRE/REC circuit adjustments were finished.*** (1) Record a 1kHz/−6.0 dBs signal and play it back later. (2) Confirm that the FM level is 105±15mVp-p. (3) If not, again adjust R33[01][8] (the Item No.5, REC FM level).

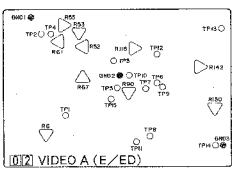
3.5 VIDEO CIRCUIT

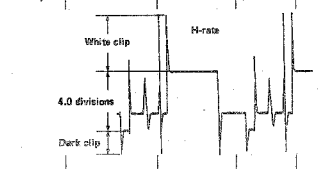
***Note:** Unless otherwise specified, all check points and adjustment parts are located on [012]VIDEO A board.*
Items of No.8 "Only the BR-7020EP" and after apply only to the model BR-7020EP, and adjustment of those items should be done individually for the unit A and the unit B.
(A) and (B) appearing in the "Check Point" and "Adjustments" columns indicate the unit A and the unit B respectively. When adjusting those items, perform it for the both units (A) and (B).

No.	Item	Check Point	Adjustments	Signal	Mode	Description
1	AGC level	TP1(E/ED) TP5(EP)	R6(OFF) R67(ON) R3(OFF) R76(ON)	COLOR BAR	E-E	(1) Set the AGC switch (DIP switch 3-1) to OFF. (2) - BR-7020E/ED - Adjust R6 so that the video level is 1.0Vp-p. - BR-7020EP - Adjust R3 so that the video level is 0.5Vp-p. (3) Set the AGC switch (DIP switch 3-1) to ON. (4) - BR-7020E/ED - Adjust R67 so that the video level is 1.0Vp-p. - BR-7020EP - Adjust R76 so that the video level is 0.5Vp-p.
2	CARRIER & DEVIATION	TP5(E/ED) GND TP1 TP3(EP)	R55(CARRI) R61(DEVI) R64(CARRI) R65(DEVI)	COLOR BAR	E-E	***Note: This adjustment has need of a carrier checker (PGJ05008-2).*** (1) Make a connection between the oscilloscope and the carrier checker with the 10:1 probe. (2) Set the carrier checker to the "CARRI" mode. (3) Adjust R55(R64 EP only) to accord the sync tip with the "CARRI" marker. (4) Adjust R61(R65 EP only) to accord the white perk portion with the "DEVI" marker.
3	7020E/ED WHITE & DARK clip	TP4 GND TP1	R52(white) R53(dark)	PULSE & BAR	E-E	(1) Adjust the oscilloscope's gain control to set between the Sync tip portion and 100% white portion for 4.0scale divisions. (2) Adjust R52 so that the white clip level is 3.6 scale divisions. (3) Adjust R53 so that the dark clip level is 2.0 scale divisions.

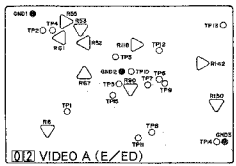
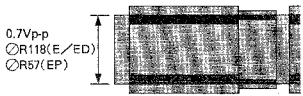
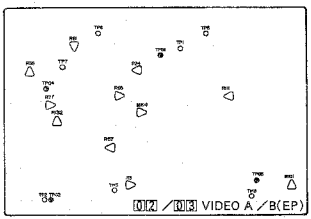
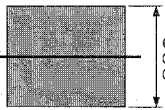




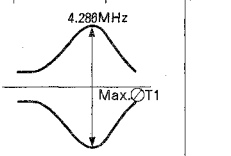


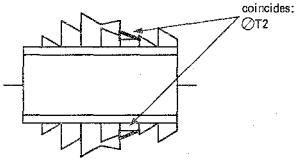


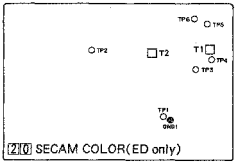
Note: Unless otherwise specified, all check points and adjustment parts are located on [012]VIDEO A board.

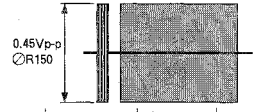
No.	Item	Check Point	Adjustments	Signal	Mode	Description
4	7020E/ED VCO	TP11 ↓ Frequency counter	R90	no signal 2.50V±.01V_{DC} ↓ TP10	E-E	(1) Supply 2.50V±0.01V_{DC} to between TP10 and GND. (2) Adjust R90 so that frequency is 5.15±0.01MHz at TP11.  [012] VIDEO A (E/ED)
5	REC FM level	TP12(E/ED) TP3(EP)	R118(E/ED) R57(EP)	COLOR BAR	E-E	(1) Adjust R118(R57 EP only) so that the FM level is 0.7Vp-p in the pedestal portion.  0.7Vp-p ∅R118(E/ED) ∅R57(EP)
6	REC COLOR level	TP14(E/ED) TP8(EP)	R150(E/ED) R101(EP)	COLOR BAR	E-E	(1) Adjust the color level to be 0.3Vp-p by R150(R101 EP only).  [012] / [013] VIDEO A / B(EP)  0.3Vp-p ∅R150(E/ED) ∅R101(EP)

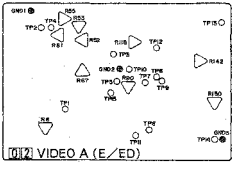
No.	Item	Check Point	Adjustments	Signal	Mode	Description
7	- Only the BR-7020ED -					
	Note: • Unless otherwise specified, all check points and adjustment parts are located on [2][0]SECAM COLOR board.					
	• Change the initial setting of the following switch:					
	DIP SW 3-5(PAL/SECAM select switch) : OFF					
①	4MHz anti bell	TP4	T1	PAL SWEEP ↓ TP3	E-E	(1) Supply the PAL sweep signal to TP3. (2) Trigger the oscilloscope externally with SYNC OUT of the sweep signal generator. (3) Adjust T1 so that the 4.286MHz level becomes maximum.
②	1MHz bell	TP1	T2	SECAM COLOR BAR	E-E	(1) Adjust T2 so that the magenta portion(odd) coincides with the magenta portion(even) at H-rate.
③	SECAM COLOR level	TP14[0][2]	R142[0][2]	SECAM COLOR BAR	E-E	(1) Adjust R142 so that the color level becomes 0.45Vp-p.



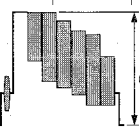
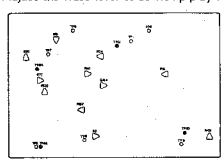
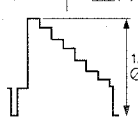
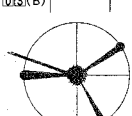
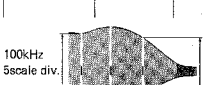








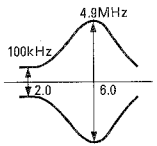
Note: Unless otherwise specified, all check points and adjustment parts are located on [012]VIDEO A board.

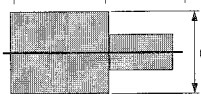
No.	Item	Check Point	Adjustments	Signal	Mode	Description
8	**- Only the BR-7020EP -**	***Make sure to adjust after the VIDEO PRE/REC circuit adjustment were finished.***				
①	**E-E level**	VIDEO OUT A	R36	COLOR BAR	E-E	(1) Adjust the video level to be 1.0Vp-p by R36.   [012] /[013] VIDEO A /B(EP)
②	**PB Y level**	VIDEO OUT A VIDEO OUT B	R24(A) R24[013](B)	COLOR BAR	REC/PB	(1) Record the color bar signal and play it back while adjusting R24 to set the video level to 1.0Vp-p. 
③	**DOC**	TP6(A) TP7(A) TP6[013](B) TP7[013](B)	R81(A) R81[013](B)	COLOR BAR	REC/PB	(1) Record the color bar signal and play it back. (2) Connect the oscilloscope's probes to TP6 and TP7 and adjust R81 so that the level of TP7's siganl is equal to the level of TP6's signal.
④	**PB COLOR level**		–	COLOR BAR	E-E	(1) Supply the EBU color bar signal to a vectorscope while adjusting its gain control to gather signal burst on the circumference of the vectorscope screen.
		VIDEO OUT A VIDEO OUT B	R111(A) R111[013](B)		REC/PB	(2) Connect the vectorscope to the VIDEO OUT terminal. Record the EBU color bar signal and play it back while adjusting R111 so that burst of the signal supplied to the vectorscope gather on the circumference of the screen. 
⑤	**PB frequency response**	VIDEO OUT A VIDEO OUT B TP1[015] TP1[015]	R77(A) R77[013](B) R56[015] R47[015]	MH-8	PB	***Note: Make sure to adjust of this adjustment after the VIDEO PRE/REC circuit adjustments were finished.*** (1) Play back the MH-8 alignment tape. (2) If there is level difference of the 2MHz signal between the CH-1 and CH-2, equalize the lower level of a channel to the higher level of the other. When CH-1 level is high: adjust [015]R56. When CH-2 level is high: adjust [015]R47. (3) Set the 100kHz signal level for 5scale divisions while adjusting R77 so that the 2MHz signal level corresponds to 4.0 scale divisons. 

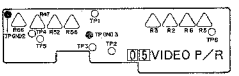
3.6 VIDEO PRE/REC CIRCUIT

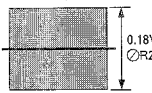
Note: Unless otherwise specified, all test points and adjustment parts are located on [015]VIDEO PRE/REC baord. When adjusting those items, perform it for the both units (A) and (B).

No.	Item	Check Point	Adjustments	Signal	Mode	Description
1	**HEAD** resonance	TP4 TP-GND2 TP1 TRIG.	R47(CH-1) R56(CH-2)	Sweep in TP2 (CH-1) TP3 (CH-2) TP-GND2	PB	(1) Connect a probe of the oscilloscope to TP1 for triggering it externally. (2) Connect the sweeper's output to TP2(TP3). (3) Connect the other probe of the oscilloscope to TP4. (4) Play back a blank tape that has not yet been used. (5) Set the 100kHz signal level for 2 scale divisions of the oscilloscope screen while adjusting R47 (R56) so that the 4.9MHz signal level corresponds to 6 scale divisions.
2	PB COLOR level & CH balance	TP5 TP-GND2 TP1 TRIG.	R52(CH balance) R66(LEV.)	MHVE-2	PB	(1) Play back the MHVE-2 alignment tape while adjusting R52 to equalize the CH-1 level and the CH-2 level to each other. (2) Adjust the color level to be 0.15Vp-p by R66.
3	REC FM level	TP2(CH-1) TP3(CH-2) TP1 TRIG.	R5(CH-1) R6(CH-2)	COLOR BAR	REC	(1) Trigger the oscilloscope externally with the signal of TP1. (2) Adjust R5(R6) so that the FM level is 50mVp-p in the pedestal portion.
4	REC COLOR level	TP5 TP1 TRIG.	R2(CH-1) R3(CH-2)	COLOR BAR	REC/PB	(1) Record the color bar signal and play it back while adjusting R2(R3) so that the chroma level is for 0.18Vp-p.









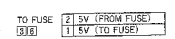
SECTION 4
DIAGRAM AND CIRCUIT BOARDS

4.1 FOREWORD

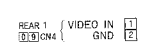
4.1.1 Expression of connector

Connector is expressed in three ways.

1)



2)



3) Expression of connectors in the overall wiring diagram and the Mother board circuit diagram.

The following illustrates "CN3 pin 1 and pin 2".

4.1.2 Expression of wiring

As the following circuit diagram is divided to print on tow sheets.

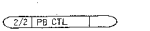
1) Circuit diagram divided into two sections:

Board No.	Board Name	Circuit Name
0 1	AUDIO MAIN	AUDIO MAIN (1/2) AUDIO MAIN (2/2)

2) When these two circuit are connected on the board, the circuit diagram expresses them as shown below.

(Example)

On the diagram of AUDIO MAIN (1/2), such an indication as the following is found on the "PB CTL" signal line.



In the above case, the end of the wiring is connected to the "PB CTL" on the AUDIO MAIN (2/2) of the diagram.

4.1.3 Signal flow on the diagram

The following arrow marks indicate the specified signal paths respectively.

- ➡ : RECORDING or E-E SIGNAL PATH
- ⇨ : PLAYBACK SIGNAL PATH
- ⇨ : REC/PLAY SIGNAL PATH

4.1.4 Measurement of voltage and waveform

1) Voltage

Measured by digital voltmeter in the REC mode.

2) Waveform

VIDEO: Unless otherwise indicated, (a) color bars signal input through LINE IN terminal in REC, (b) color bars signal in PB.

Note: Indicated voltages were measured as directly at respective pins of semiconductors and connectors as possible, however, some voltages were measured at the nearest parts to the specified measuring points because they were hard of access.

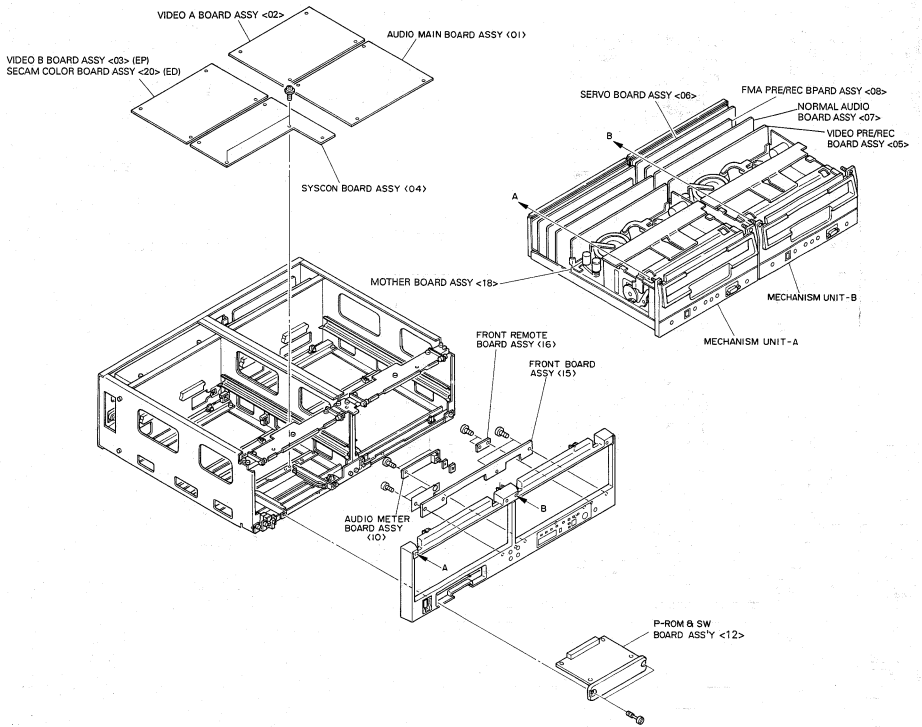
4.1.5 Unit of value

Unless otherwise specified:

1) Resistance is in Ω (1/6 W, 1/8 W).
2) Capacitance in μF.
3) Inductance in μH.
4) All diodes are 1SS133.

4.1.6 Circuit board locations

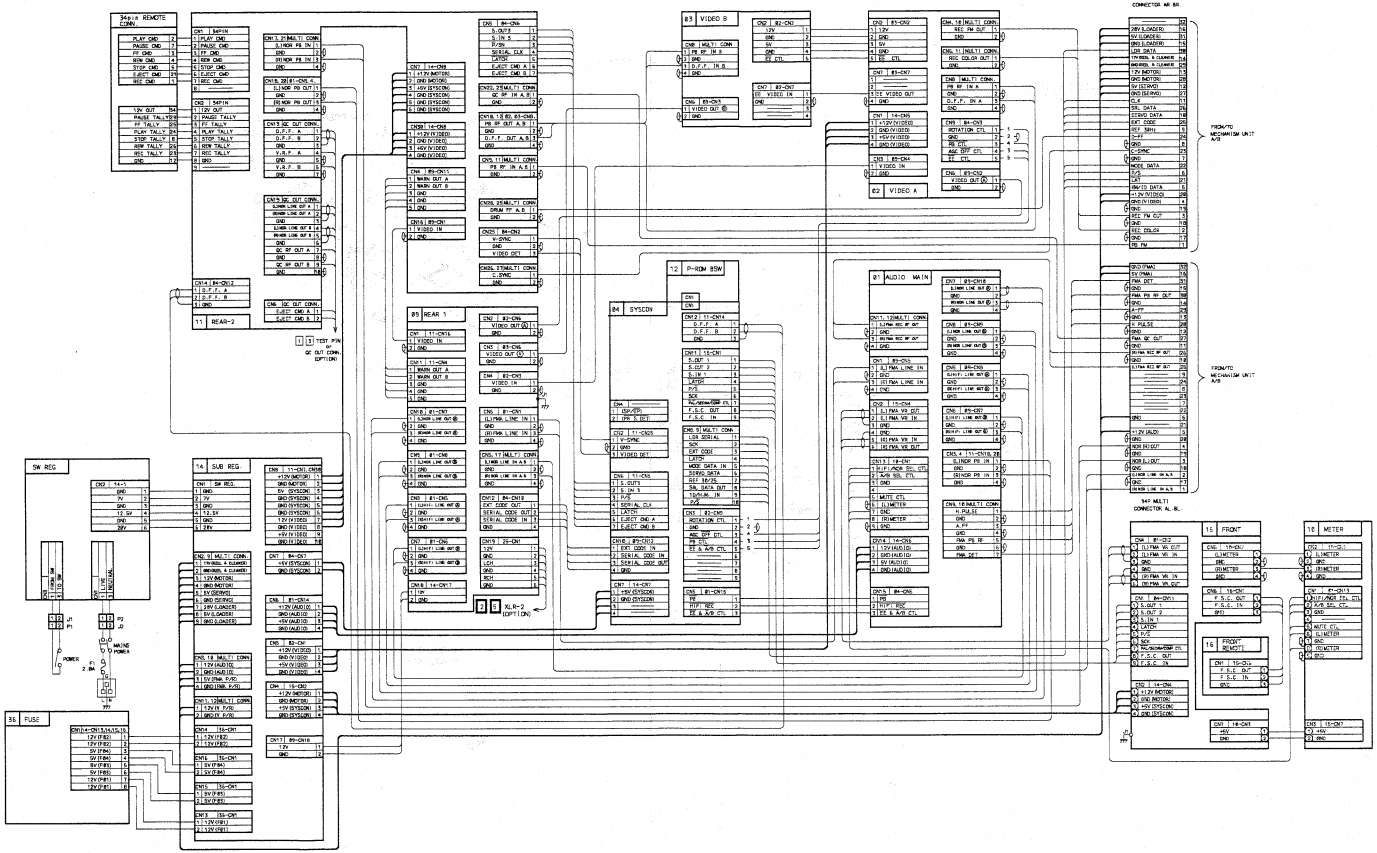
Board No.	Board Name	Page of diagram			
		Block diagram	Schematic diagram	Circuit board	Parts list
01	AUDIO MAIN BR-7020EP	4-14	4-32 ~ 34	4-37	6-1
	AUDIO MAIN BR-7020E/ED	4-15	4-35, 4-36	4-37	6-1
02	VIDEO A BR-7020EP	4-10, 4-11	4-20	4-21	6-4
	VIDEO A BR-7020E/ED	4-12	4-26	4-27	6-6
03	VIDEO B BR-7020EP only	4-10, 4-11	4-22	4-21	6-8
04	SYSCON	4-16	4-42	4-43	6-10
05	VIDEO PRE/REC	4-10, 4-11	4-30	4-31	6-12
06	SERVO	4-17	4-46	4-47	6-13
07	NORMAL AUDIO	4-13	4-40	4-41	6-14
08	FMA PRE/REC	4-14, 4-15	4-38	4-39	6-15
09	REAR-1 BR-7020EP	–	4-23	4-25	6-16
	REAR-1 BR-7020E/ED	–	4-24	4-25	6-16
10	AUDIO METER	–	4-50	4-51	6-17
11	REAR-2	4-16	4-48	4-49	6-17
12	P-ROM & SWITCH	4-16	4-44	4-45	6-11
14	SUB REGULATOR	–	4-18	4-19	6-18
15	FRONT	4-16	4-50	4-51	6-17
16	FRONT REMOTE	4-16	4-50	4-51	6-17
17	MECHA FRONT	–	4-52	4-53	6-18
18	MOTHER	–	4-9	4-7	6-19
19	LOADER	–	4-52	4-53	6-19
20	SECAM COLOR BR-7020ED only	4-12	4-28	4-29	6-19
21	DECK TERMINAL	–	4-54	4-54	6-20
22	RELAY	–	4-54	4-54	6-20
24	END SENSOR	–	4-54	4-54	6-20
35	A/C HEAD	–	4-8	4-54	6-20
36	FUSE	–	4-18	4-19	6-20
56	CASSETTE HOUSING	–	4-54	4-54	6-20

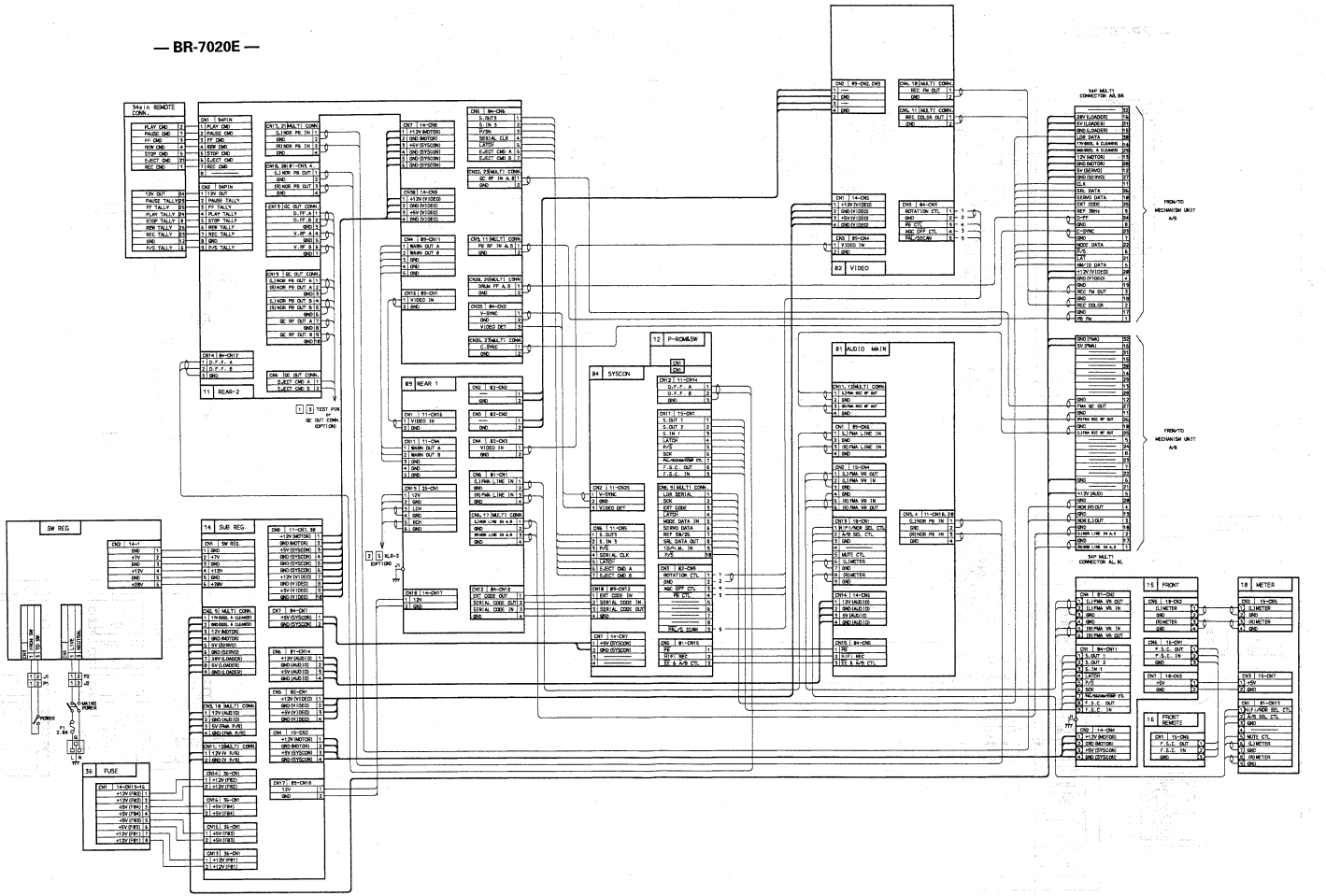

VIDEO A BOARD ASSY <02>
AUDIO MAIN BOARD ASSY (01)
VIDEO B BOARD ASSY <03> (EP)
SECAM COLOR BOARD ASSY <20> (ED)
SYSCON BOARD ASSY (04)
SERVO BOARD ASSY <06>
FMA PRE/REC BPARD ASSY <08>
NORMAL AUDIO BOARD ASSY <07>
VIDEO PRE/REC BOARD ASSY <05>
B
A
MOTHER BOARD ASSY <18>
MECHANISM UNIT-B
MECHANISM UNIT-A
FRONT REMOTE BOARD ASSY (16)
FRONT BOARD ASSY (15)
AUDIO METER BOARD ASSY (10)
B
A
P-ROM & SW BOARD ASS'Y <12>

4-3

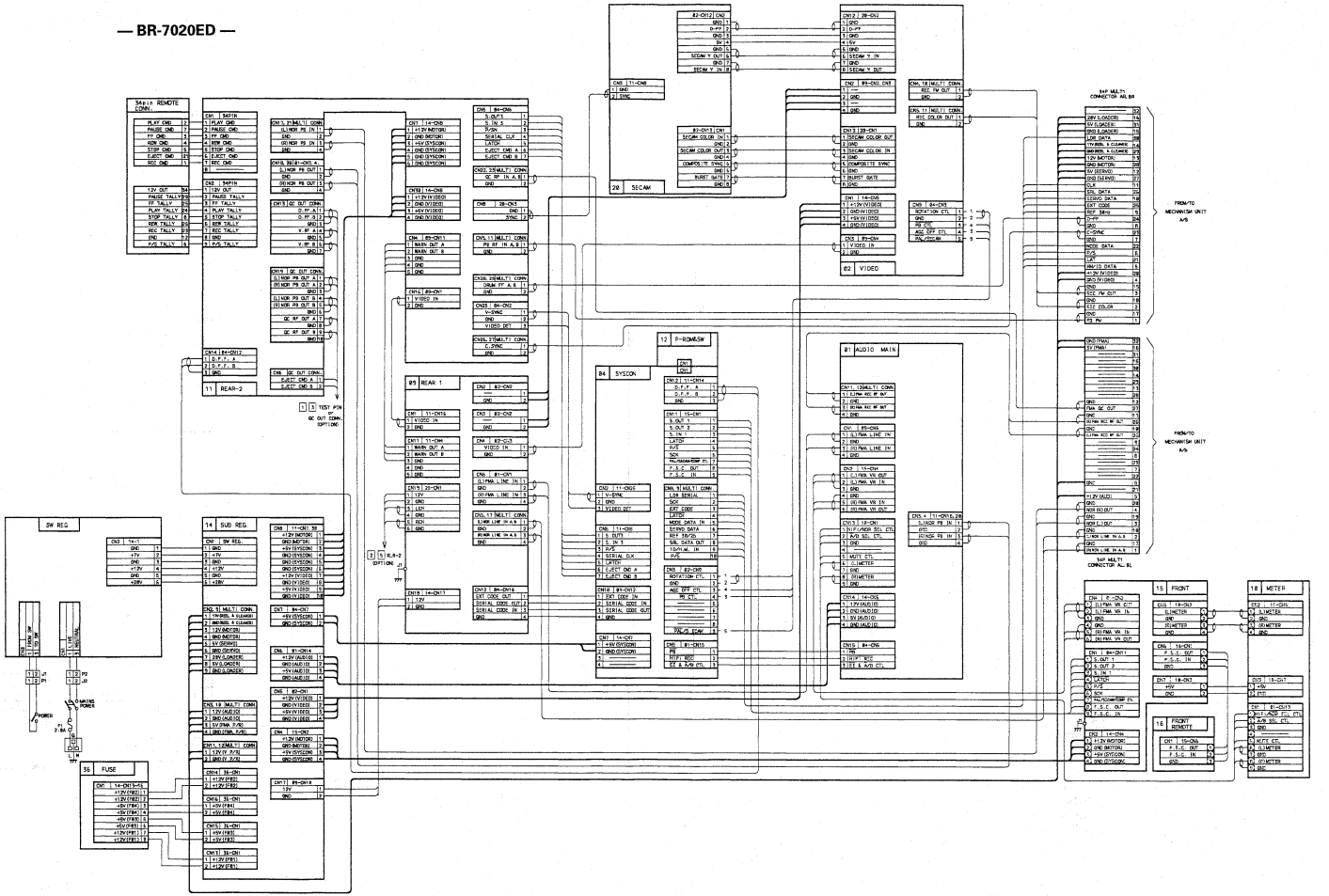
4.2 OVERALL WIRING DIAGRAM

— BR-7020EP —



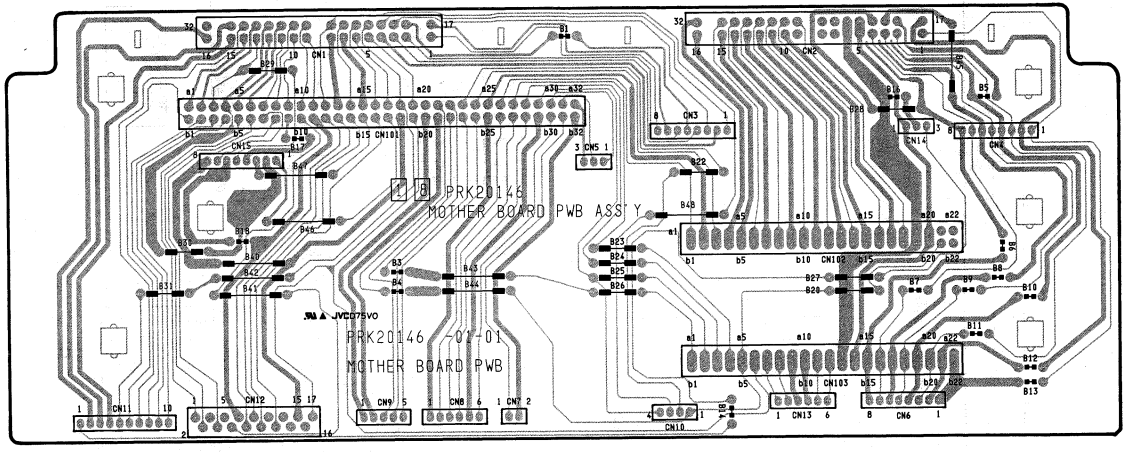

54pin REMOTE CONN.
SW REG
SUB REG.
REAR-2
REAR 1
SYSCON
P-ROM&SW
AUDIO MAIN
FRONT
METER
FUSE
54P MULTI CONNECTOR ASS'Y
FROM/TO MECHANISM UNIT A/B
TEST PIN
QC OUT CONN. (OPTION)
KLH-2 (OPTION)
POWER
MAINS VOLTAGE

— BR-7020ED —

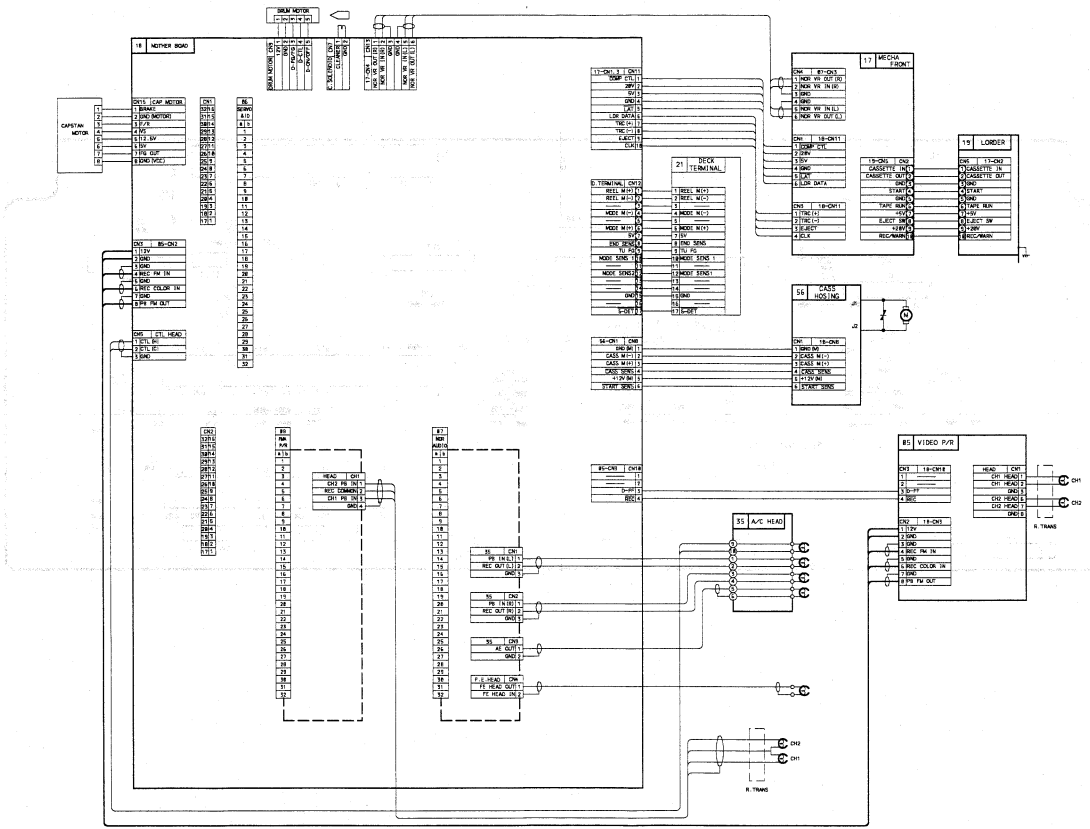


4-6

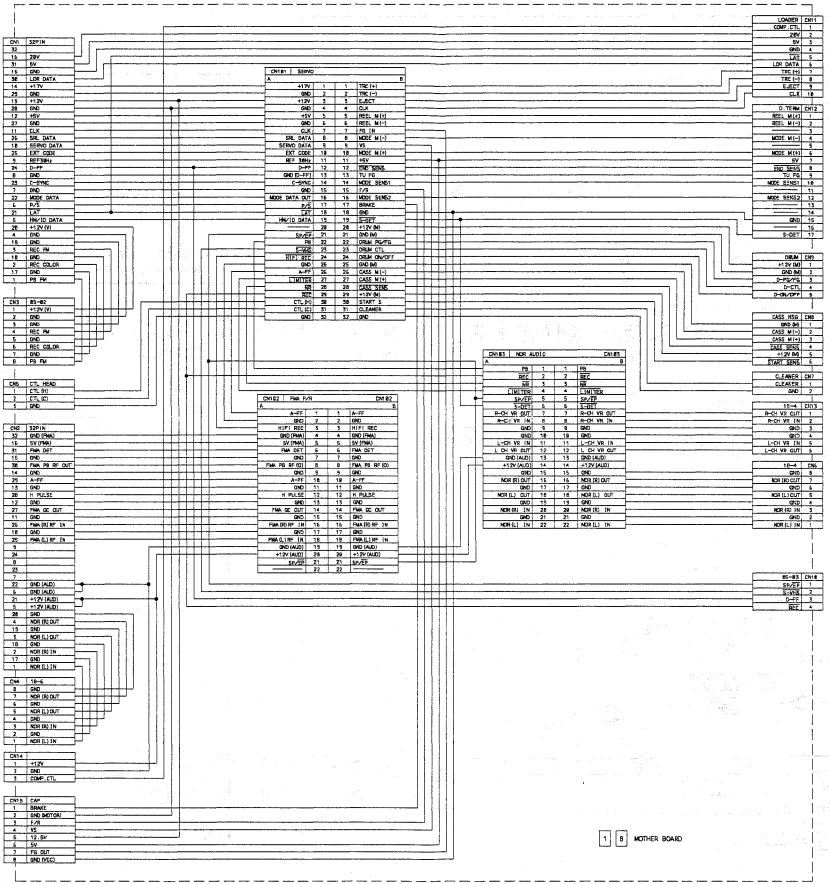
4.3 MOTHER CIRCUIT BOARD



4.4 MECHANISM UNIT OVERALL WIRING DIAGRAM



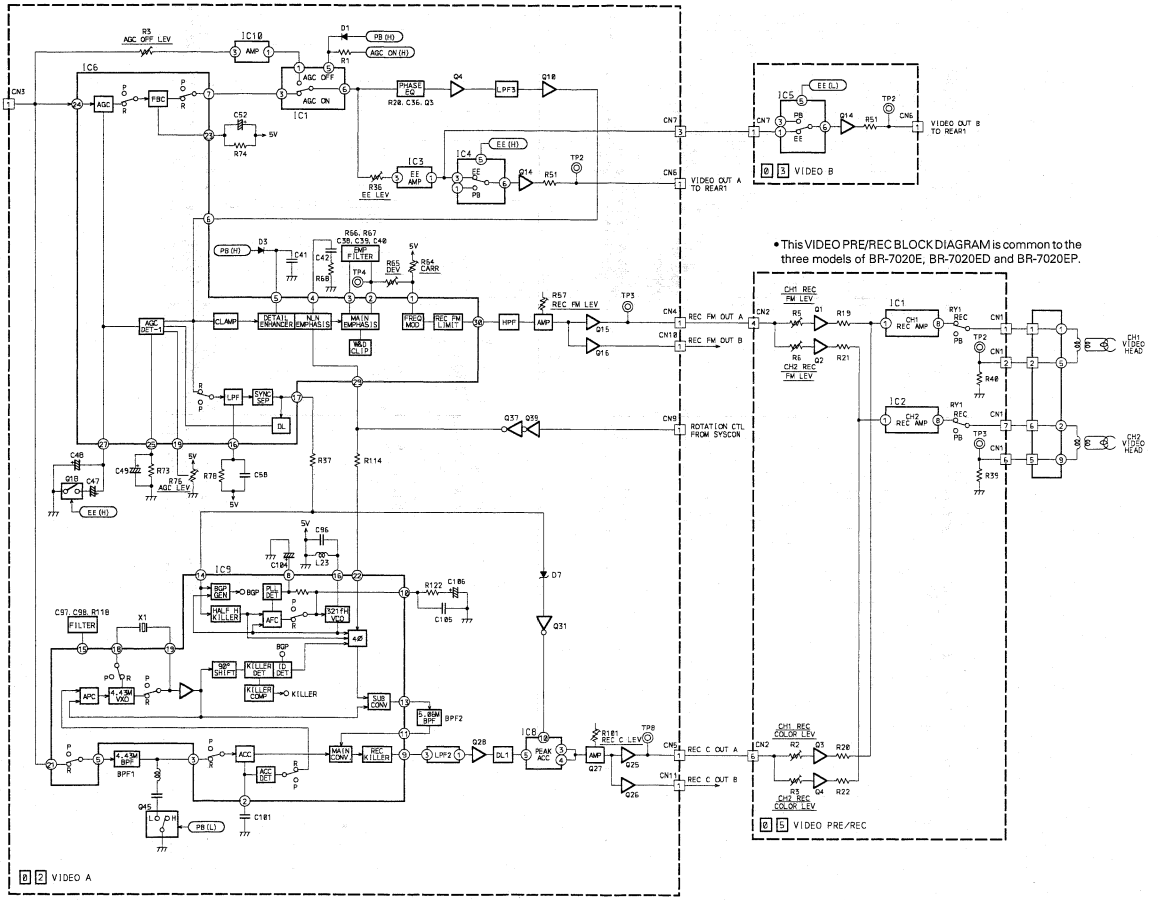
4.5 MOTHER SCHEMATIC DIAGRAM



4-9

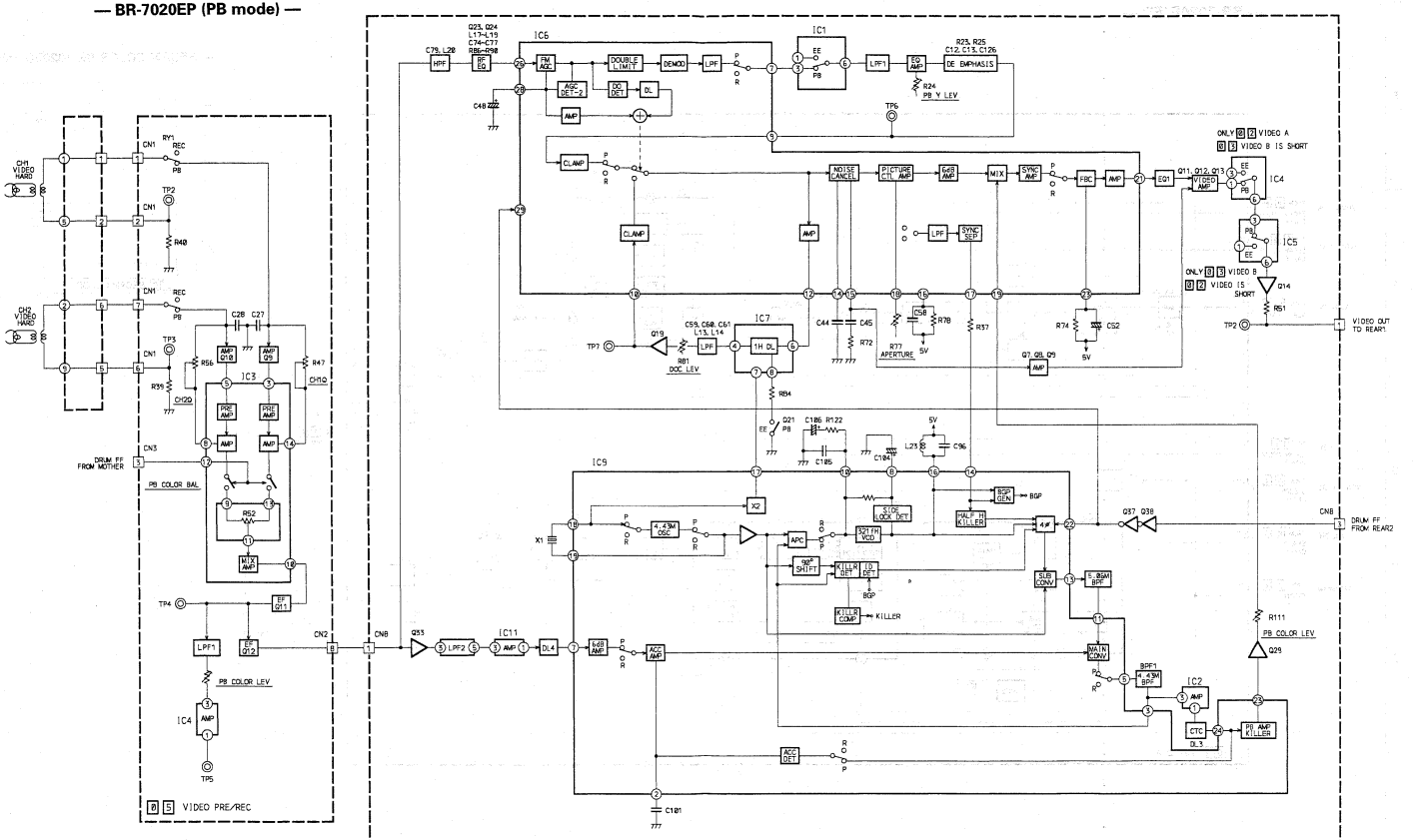
4.6 VIDEO BLOCK DIAGRAM

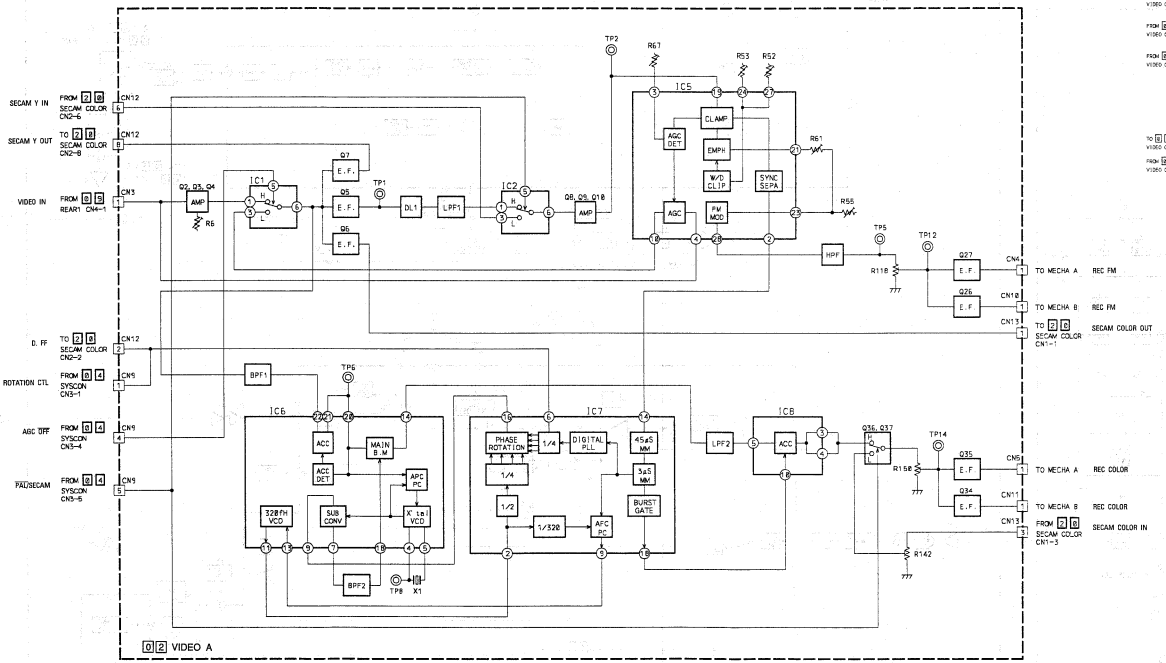
— BR-7020EP (REC mode) —



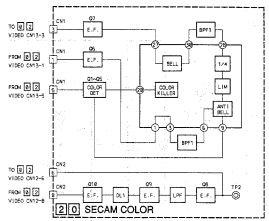
4-10

— BR-7020EP (PB mode) —

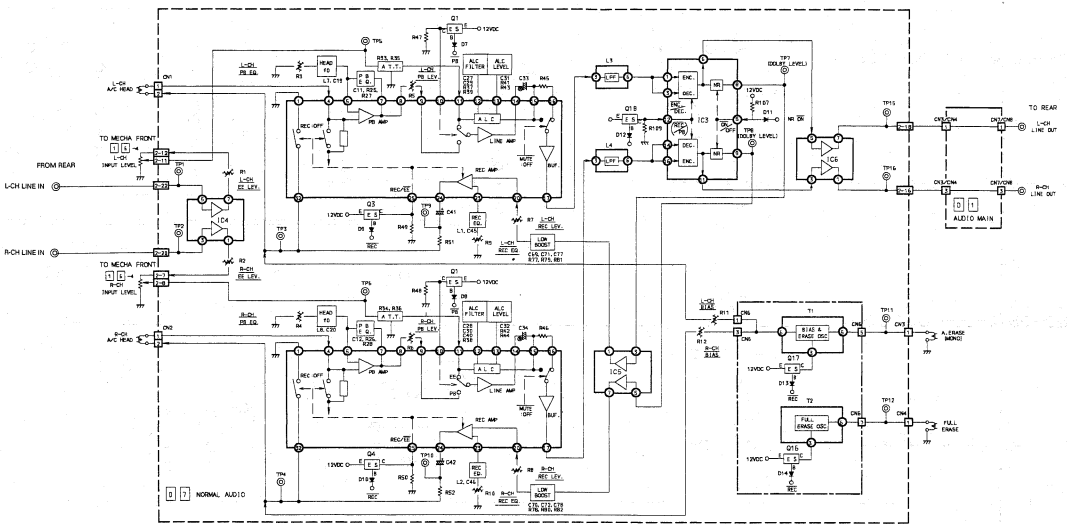




— SECAM COLOR BR-7020ED only —

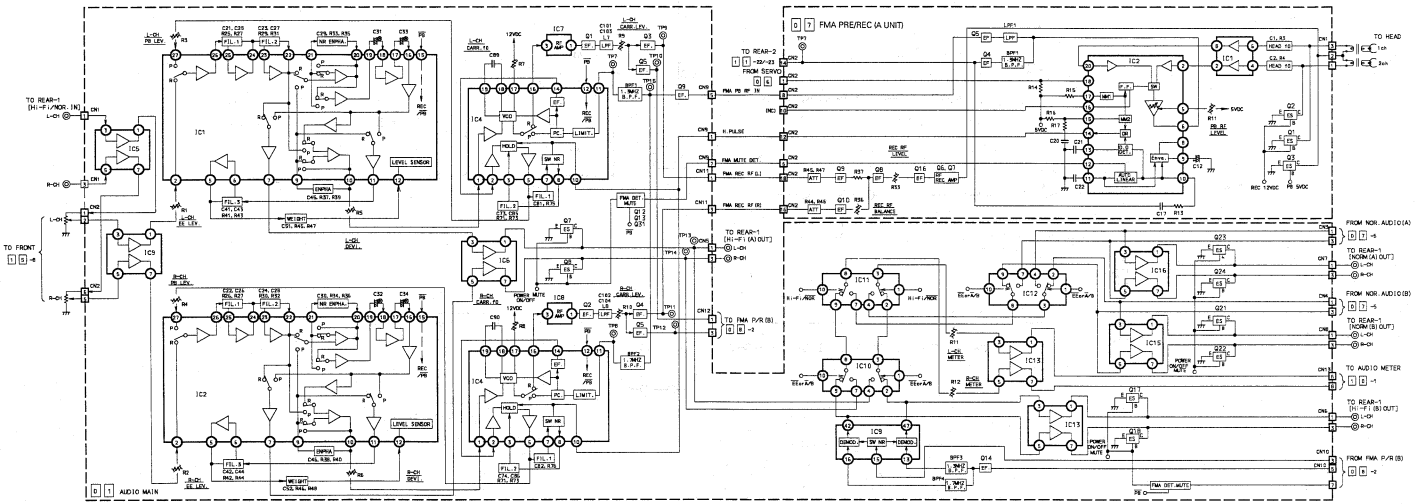


4.7 NORMAL AUDIO BLOCK DIAGRAM

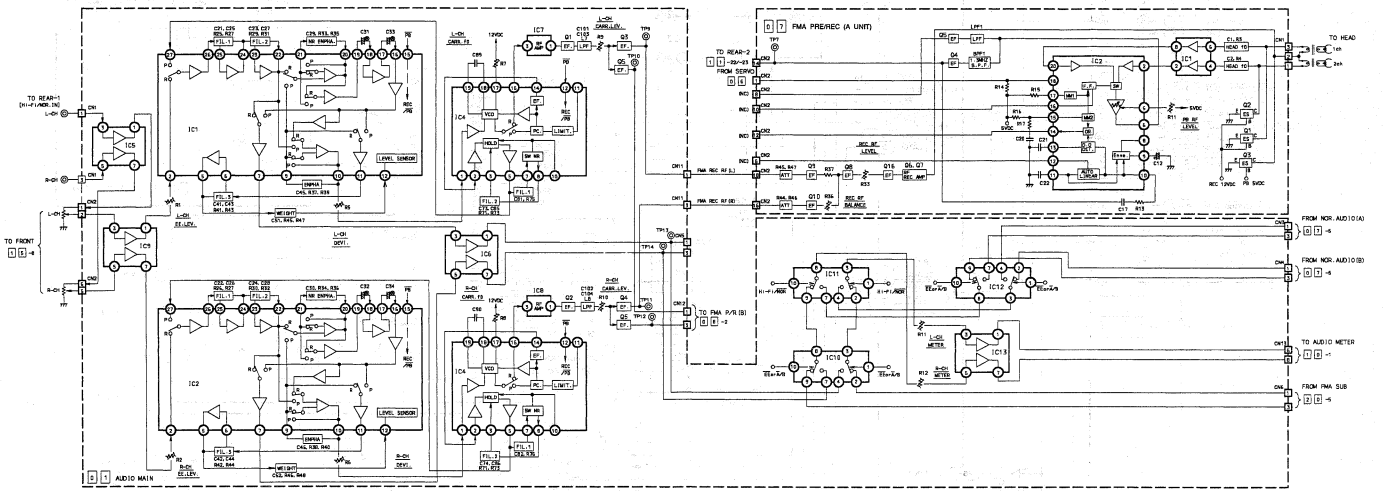


4.8 AUDIO BLOCK DIAGRAM

— BR-7020EP —

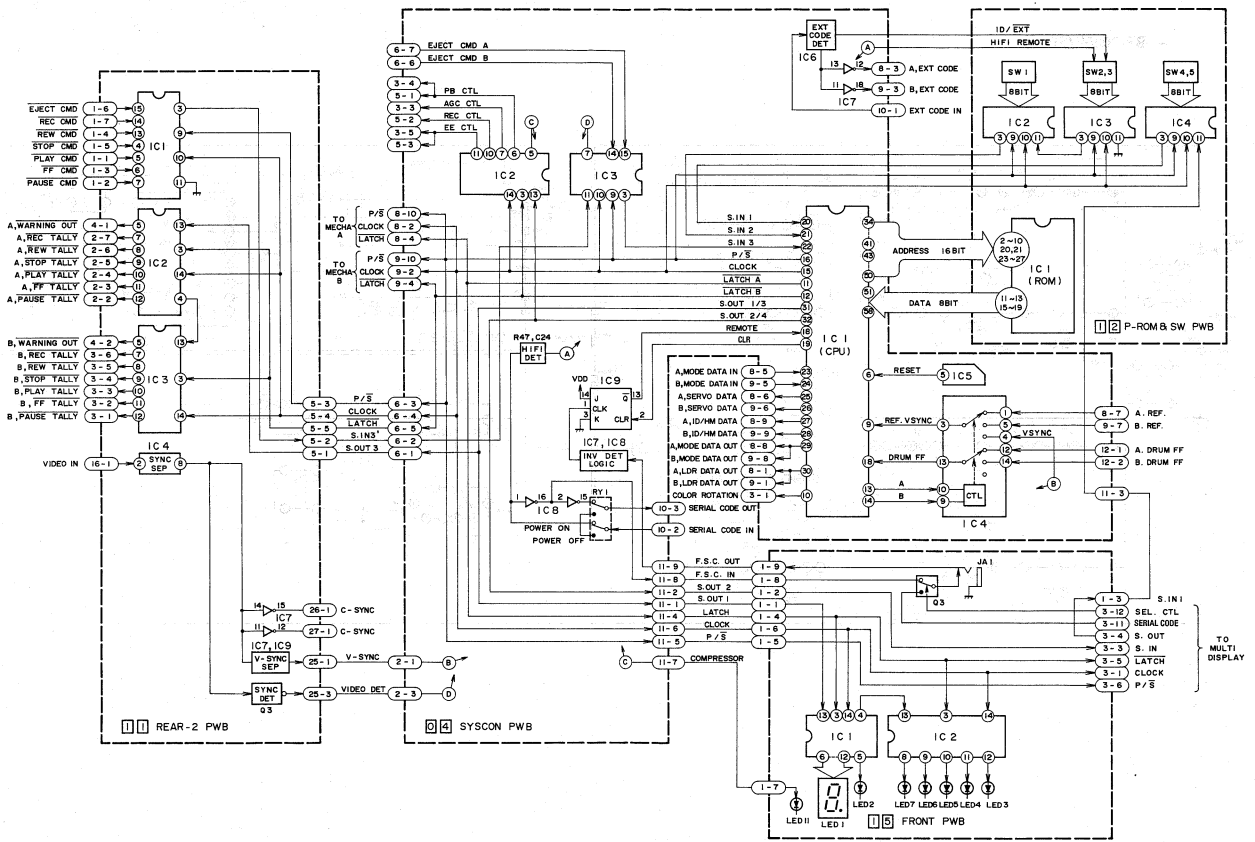


— BR-7020E/ED —

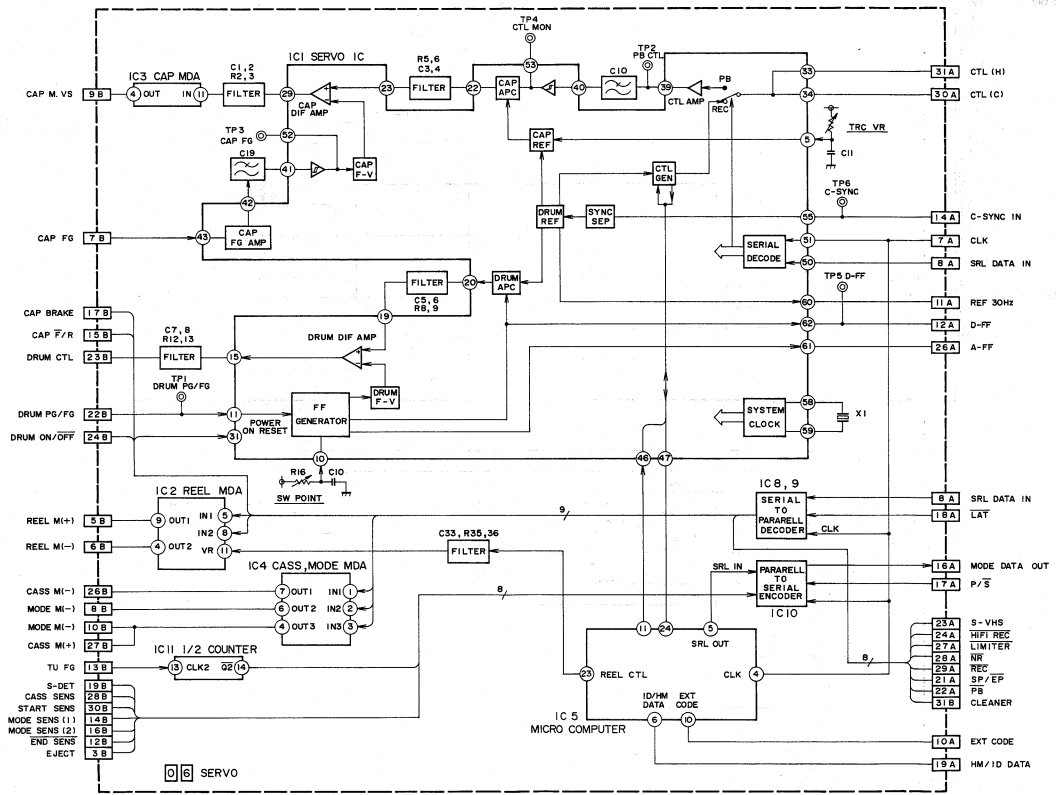


4-15

4.9 SYSCON BLOCK DIAGRAM



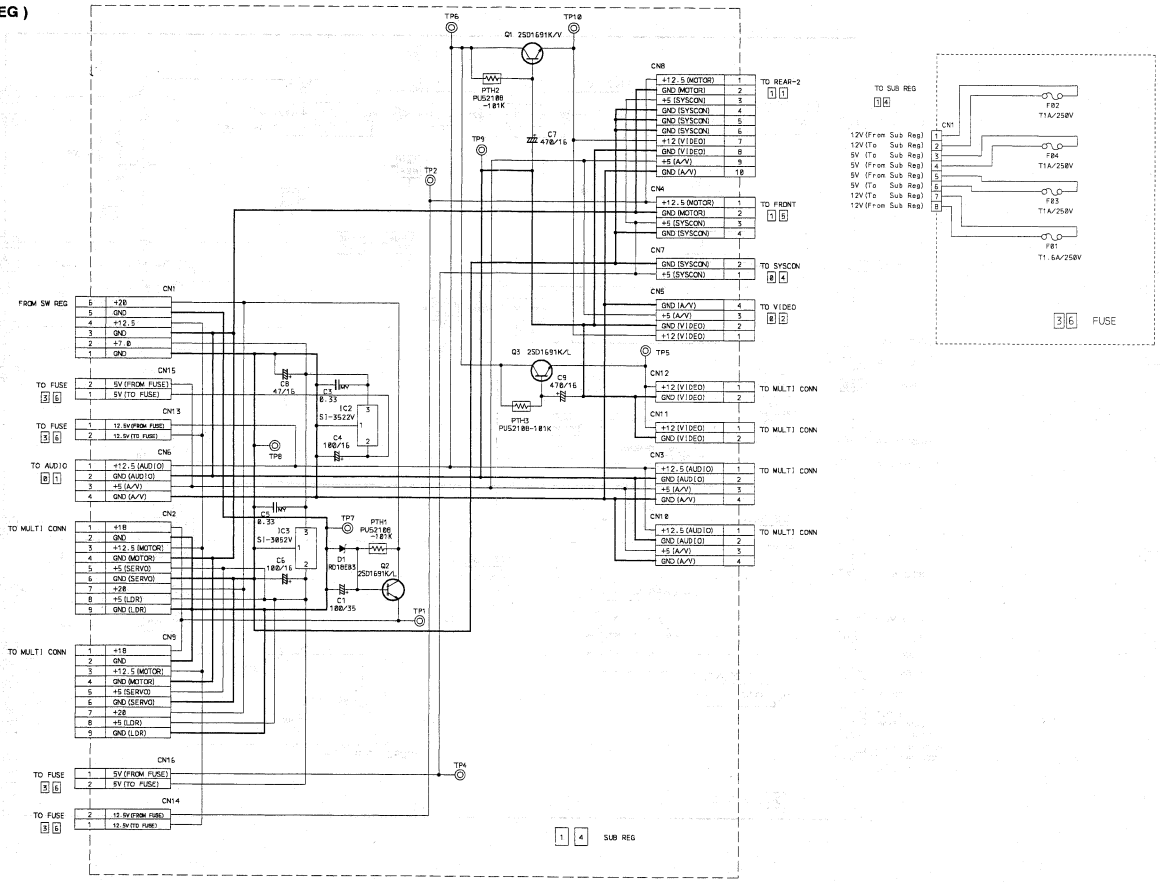
4.10 SERVO BLOCK DIAGRAM



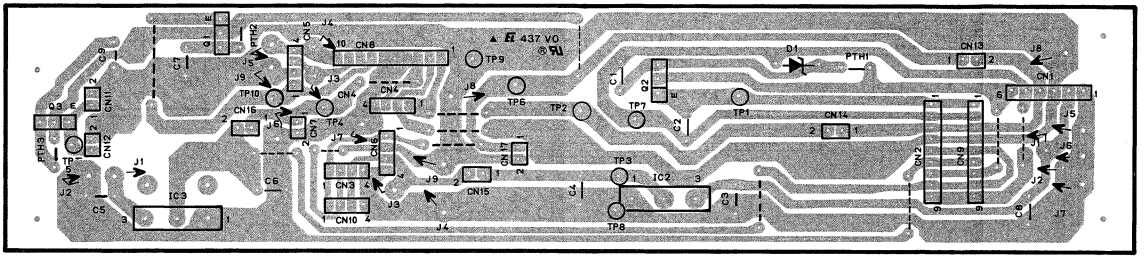
4.11 SUB REGULATOR & FUSE SCHEMATIC DIAGRAMS

- DC voltage (1/1) - ([14] SUB REG)

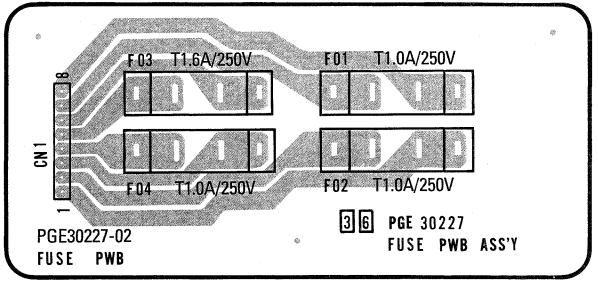
SYMBOL No.		REC	SYMBOL No.		REC
INTEGRATED CIRCUIT			CN9	1	18.1
IC2	1	0.0		2	0.0
	2	5.2		3	12.5
	3	7.0		4	0.0
IC3	1	0.0		5	5.0
	2	5.0		6	0.0
	3	7.0		7	20.0
TRANSISTOR				8	5.0
Q1	B	12.2		9	0.0
	C	12.3	CN10	1	12.3
	E	11.6		2	0.0
Q2	B	18.7		3	5.1
	C	20.0		4	0.0
	E	18.1	CN11	1	11.6
Q3	B	12.2		2	0.0
	C	12.3	CN12	1	11.6
	E	11.6		2	0.0
CONNECTOR			CN13	1	12.3
CN1	1	0.0		2	12.5
	2	7.0	CN14	1	12.5
	3	0.0		2	12.5
	4	12.5	CN15	1	5.2
	5	0.0		2	5.1
	6	20.0	CN16	1	5.0
CN2	1	18.1		2	5.0
	2	0.0			
	3	12.5			
	4	0.0			
	5	5.0			
	6	0.0			
	7	20.0			
	8	5.0			
	9	0.0			
CN3	1	12.3			
	2	0.0			
	3	5.1			
	4	0.0			
CN4	1	12.5			
	2	0.0			
	3	5.0			
	4	0.0			
CN5	1	11.6			
	2	0.0			
	3	5.1			
	4	0.0			
CN6	1	12.3			
	2	0.0			
	3	5.1			
	4	0.0			
CN7	1	5.0			
	2	0.0			
CN8	1	12.5			
	2	0.0			
	3	5.0			
	4	0.0			
	5	0.0			
	6	0.0			
	7	11.6			
	8	0.0			
	9	5.1			
	10	0.0			



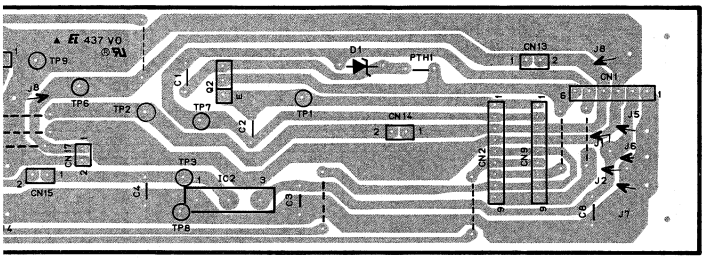
— SUB REGULATOR —



— FUSE —



4-19



.0A/250V

.0A/250V

PGE 30227
FUSE PWB ASS'Y

VIDEO A <02> - BR-7020EP -

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	6.9	6.9
	2	0.	0.
	3	6.9	6.9
	4	0.	0.
	5	5.3	7.2
	6	6.0	6.0
	7	10.1	10.1
IC2	1	6.8	6.8
	2	11.8	11.8
	3	2.7	2.7
	4	0.	0.
IC3	1	6.9	8.7
	2	11.7	11.7
	3	2.7	2.7
	4	0.	0.
IC4	1	8.2	8.2
	2	0.	0.
	3	8.1	8.2
	4	0.	0.
	5	5.9	7.3
	6	7.3	7.3
	7	11.7	11.7
IC6	1	2.3	3.5
	2	2.5	2.5
	3	2.5	2.3
	4	3.3	2.6
	5	3.9	4.6
	6	3.4	1.1
	7	2.8	2.8
	8	0.	0.
	9	0.9	3.3
	10	3.2	3.3
	11	—	—
	12	2.9	2.8
	13	4.3	3.1
	14	4.3	3.1
	15	4.3	3.4
	16	3.3	3.4
	17	0.3	0.3
	18	2.7	2.6
	19	4.3	4.2
	20	—	—
	21	2.6	2.3
	22	4.8	4.8
	23	3.3	3.1
	24	3.3	3.1
	25	2.9	3.7
	26	3.4	3.5
	27	1.4	1.2
	28	—	—
	29	0.8	0.8
	30	3.3	4.0
IC7	1	9.1	9.0
	2	0.	0.
	3	5.8	13.0
	4	0.9	3.1
	5	0.	4.4
	6	5.8	9.0
	7	2.0	2.0
	8	0.2	2.8
IC8	1	—	—
	2	0.	0.
	3	3.0	3.0
	4	3.0	3.3
	5	4.9	3.0
	6	4.9	4.9
	7	0.	0.
	8	3.2	3.1
	9	3.2	3.2
	10	3.2	3.1
	11	4.9	4.9
	12	—	—
IC9	1	0.	0.
	2	1.5	1.8
	3	3.1	3.0
	4	2.4	2.4
	5	3.3	2.5
	6	0.	0.
	7	3.1	3.0
	8	2.6	2.5
	9	1.8	4.8

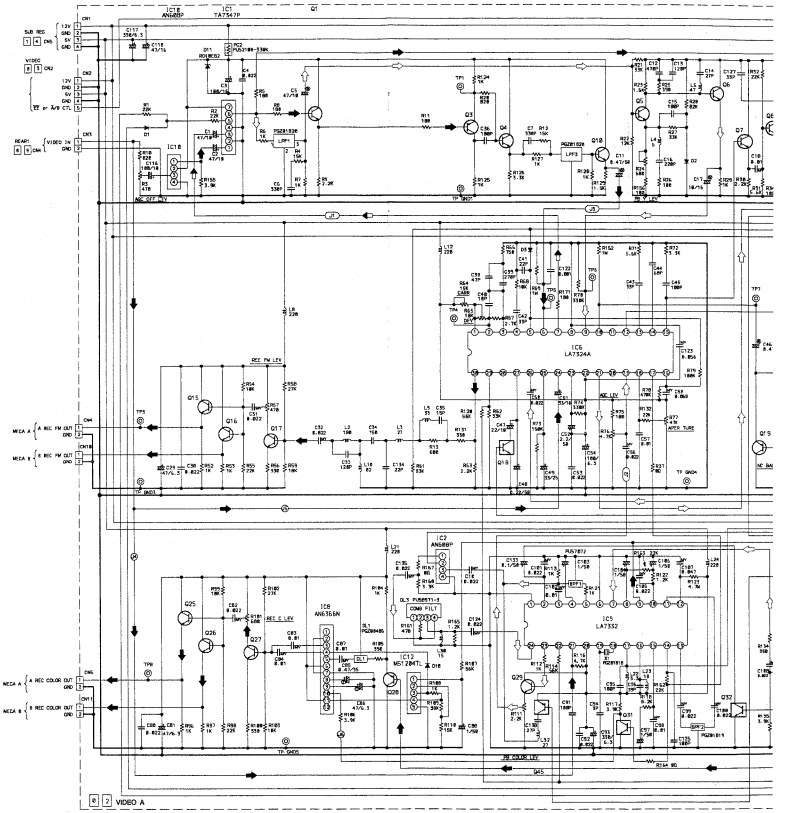
SYMBOL No.		REC	PB
IC9	10	2.6	2.6
	11	2.5	2.5
	12	1.9	1.9
	13	4.5	0.
	14	0.4	0.4
	15	2.3	2.3
	16	4.8	4.8
	17	4.8	4.8
	18	2.8	2.2
	19	3.8	3.1
	20	4.8	4.8
	21	4.1	4.1
	22	0.	2.7
	23	2.2	3.2
	24	5.1	4.2
IC10	1	5.9	5.9
	2	10.1	10.1
	3	2.5	2.5
	4	0.	0.
IC11	1	6.3	6.3
	2	11.8	11.8
	3	2.7	2.7
	4	0.	0.
IC12	1	1.8	4.8
	2	1.4	1.4
	3	0.	0.
	4	4.9	4.9
	5	0.	0.
TRANSISTOR			
Q1	B	6.1	6.1
	C	10.1	10.1
	E	5.4	5.4
Q3	B	5.4	5.4
	C	4.0	4.0
	E	6.0	6.0
Q4	B	6.0	6.0
	C	10.1	10.1
	E	5.3	5.3
Q5	B	1.3	1.3
	C	5.5	3.5
	E	0.6	0.6
Q6	B	3.4	3.4
	C	5.1	5.1
	E	2.7	2.7
Q7	B	4.2	3.9
	C	5.1	5.0
	E	3.5	3.2
Q8	B	0.9	0.9
	C	2.7	2.7
	E	0.2	0.2
Q9	B	2.7	2.7
	C	2.1	5.2
	E	2.0	2.0
Q10	B	2.6	2.6
	C	10.1	12.1
	E	1.9	1.9
Q11	B	2.4	2.4
	C	10.8	12.8
	E	1.7	1.7
Q12	B	10.8	10.8
	C	8.7	8.7
	E	11.5	11.5
Q13	B	3.7	3.7
	C	0.	0.
	E	4.3	4.3
Q14	B	7.3	7.3
	C	11.7	11.7
	E	6.6	6.6
Q15	B	3.2	3.2
	C	5.1	5.1
	E	2.4	2.4

SYMBOL No.		REC	PB
Q16	B	3.2	3.2
	C	5.1	5.1
	E	2.4	2.4
Q17	B	1.8	1.8
	C	3.5	3.5
	E	1.0	1.0
Q18	B	8.3	0.
	C	0.	0.3
	E	0.	0.
Q19	B	0.	0.8
	C	0.7	0.
	E	0.7	1.5
Q20	B	0.9	3.1
	C	9.1	9.1
	E	0.2	2.4
Q21	B	8.3	0.
	C	0.	2.8
	E	0.	0.
Q22	B	3.8	3.8
	C	5.0	5.0
	E	3.1	3.1
Q23	B	1.7	1.7
	C	3.8	3.8
	E	1.0	1.0
Q24	B	2.5	2.5
	C	3.3	3.3
	E	1.8	1.8
Q25	B	3.1	3.1
	C	4.9	4.9
	E	2.4	2.4
Q26	B	3.1	3.1
	C	4.9	4.9
	E	2.4	2.4
Q27	B	1.7	1.7
	C	3.0	3.0
	E	1.0	1.0
Q28	B	0.9	2.4
	C	0.	0.
	E	1.6	3.1
Q29	B	2.2	1.8
	C	4.8	4.8
	E	1.6	1.2
Q31	B	0.3	0.3
	C	3.7	3.7
	E	0.	0.
Q32	B	8.3	0.
	C	0.	0.
	E	0.	0.
Q33	B	0.	5.7
	C	0.4	11.7
	E	0.4	5.0
Q34	B	11.8	11.0
	C	0.	11.7
	E	11.8	11.8
Q35	B	0.	11.7
	C	8.3	0.
	E	0.	0.
Q36	B	8.3	0.
	C	0.	0.7
	E	0.	0.
Q37	B	2.2	0.2
	C	0.	0.
	E	0.	0.
Q38	B	0.	0.7
	C	2.2	2.2
	E	0.	0.

SYMBOL No.		REC	PB
Q39	B	2.2	0.
	C	2.2	2.4
	E	0.	0.
Q40	B	0.	11.7
	C	2.2	0.
	E	0.	0.
Q41	B	1.5	1.5
	C	3.4	3.4
	E	0.8	0.8
Q42	B	3.4	3.4
	C	5.0	5.0
	E	2.6	2.6
Q45	B	4.8	0.6
	C	4.8	4.8
	E	4.8	4.8
CONNECTOR			
CN1	1	11.9	11.9
	2	0.	0.
	3	5.1	5.1
	4	0.	0.
CN2	1	11.9	11.9
	2	0.	0.
	3	5.1	5.1
	4	0.	0.
	5	0.6	9.0
CN3	1	0.	0.
	2	0.	0.
CN4	1	2.4	2.4
	2	0.	0.
CN5	1	2.4	2.4
	2	0.	0.
CN6	1	0.	0.
	2	0.	0.
CN7	1	—	—
	2	—	—
	3	8.1	8.1
	4	0.	0.
CN8	1	0.	0.
	2	0.	0.
	3	0.	0.
	4	0.	0.
CN9	1	2.8	1.8
	2	0.	0.
	3	12.3	0.
	4	6.7	11.5
	5	0.	8.7
CN10	1	2.4	2.4
	2	0.	0.
CN11	1	2.4	2.4
	2	0.	0.

4.13 VIDEO A SCHEMATIC DIAGRAM (BR-7020EP)

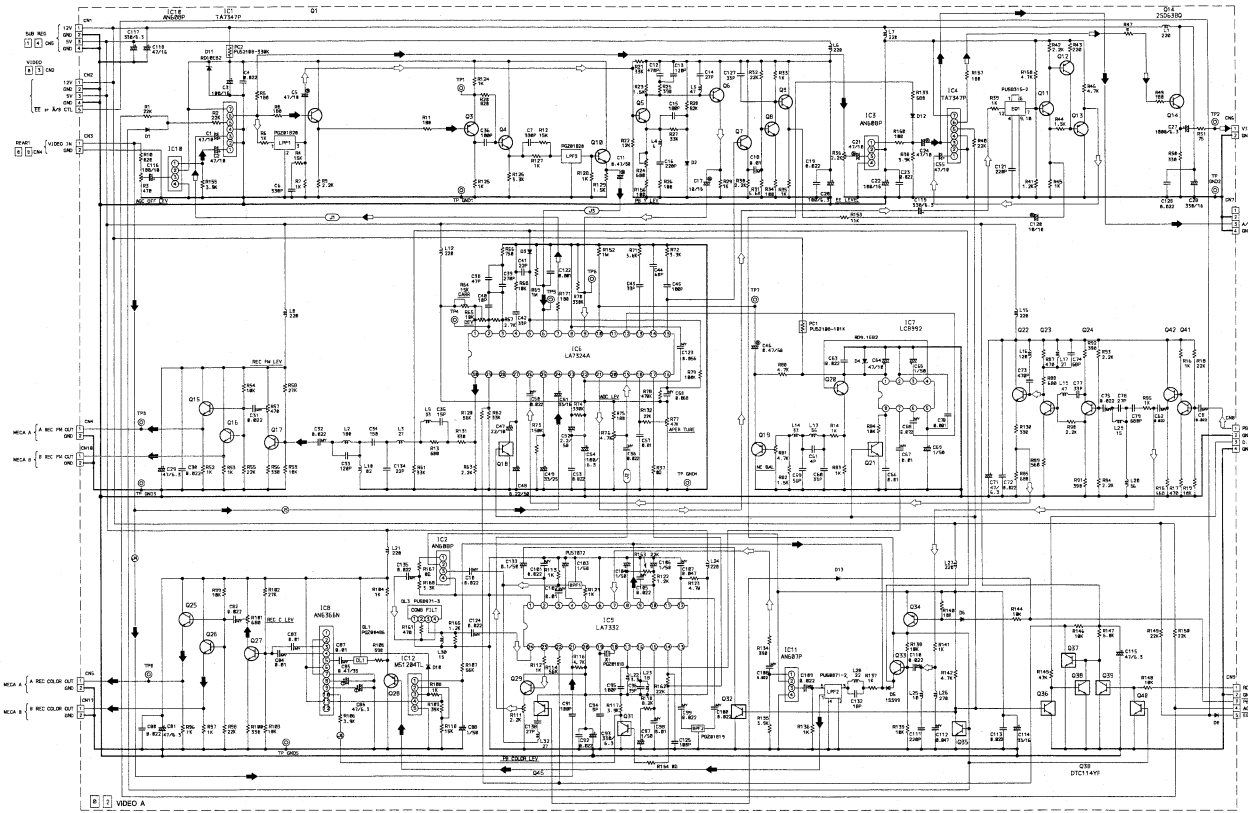
— BR-7020EP —



TP1	TP2	TP3	TP4	TP5	TP6
REC 1.0 Vp-p	REC/PB 1.0 Vp-p	REC 0.7 Vp-p	REC 1.15 Vp-p (Pulse & bar)	REC 0.5 Vp-p	PB 0.5 Vp-p

4.13 VIDEO A SCHEMATIC DIAGRAM (BR-7020EP)

— BR-7020EP —



TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8
REC 1.0 Vp-p	REC/PB 1.0 Vp-p	REC 0.7 Vp-p	REC 1.15 Vp-p (Pulse & bar)	REC 0.5 Vp-p	PB 0.5 Vp-p	PB 0.5 Vp-p	REC 0.3 Vp-p

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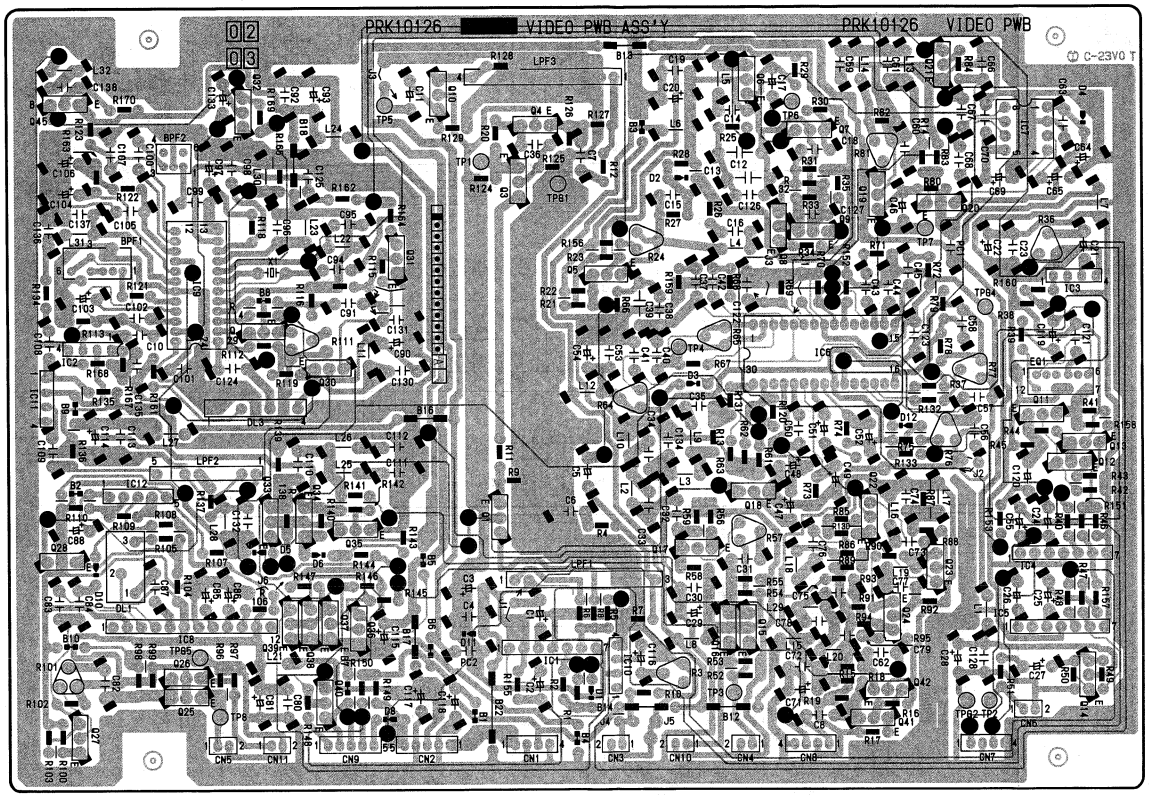
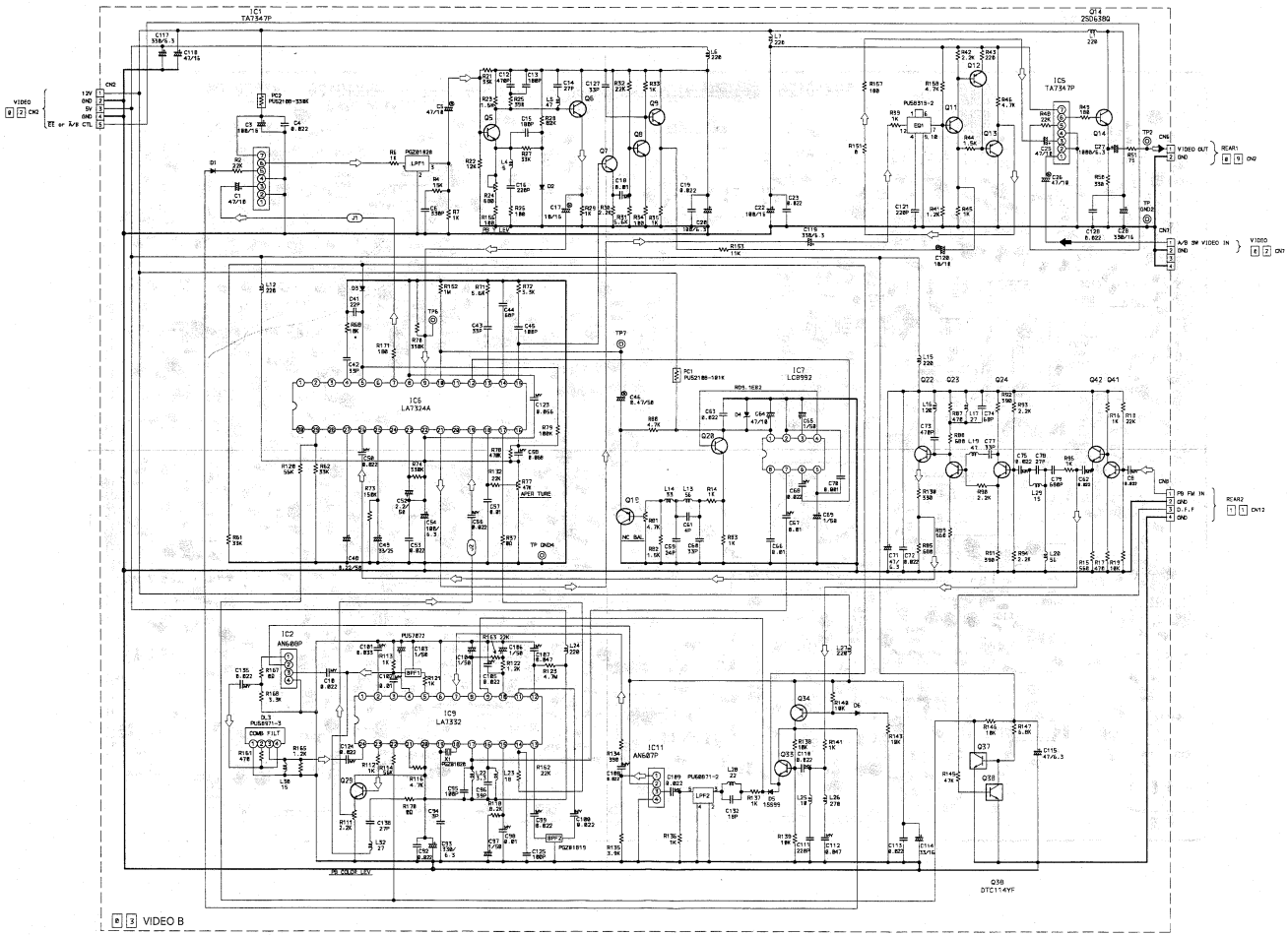
4.14 VIDEO A, B CIRCUIT BOARD (BR-7020EP)

— BR-7020EP —



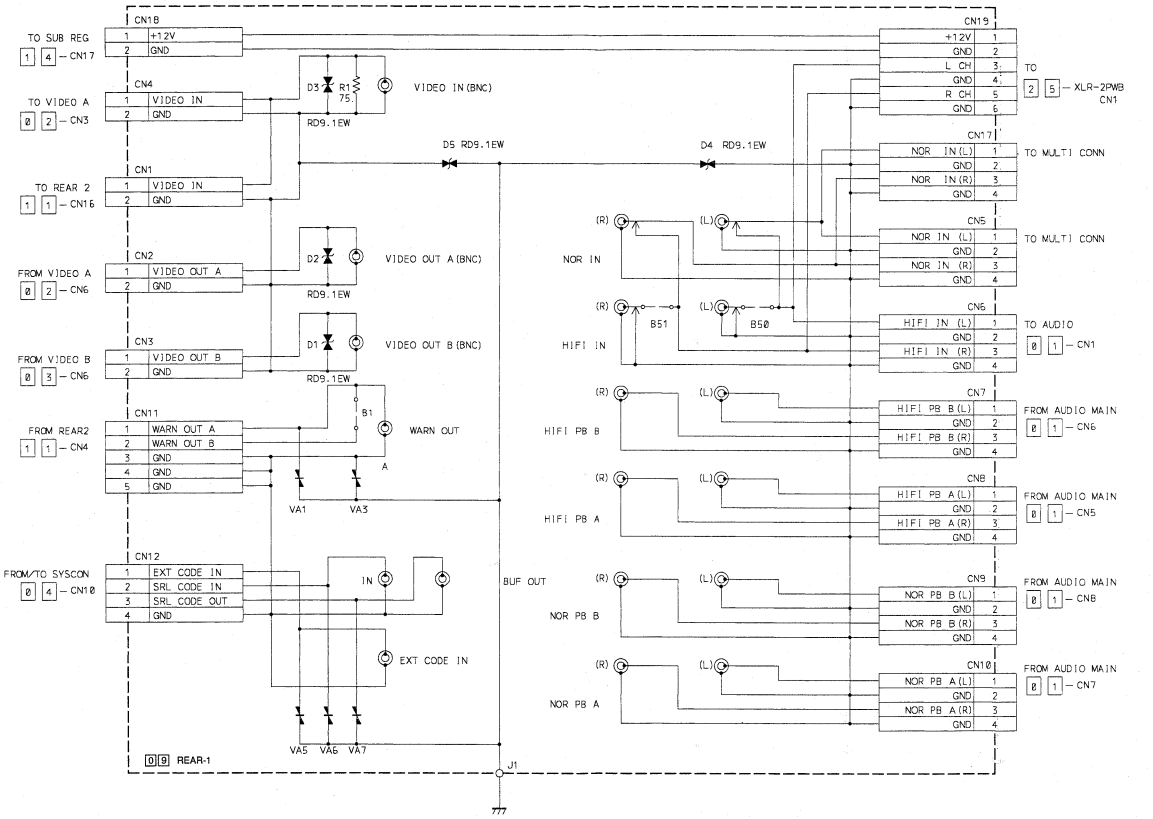
4.15 VIDEO B SCHEMATIC DIAGRAM (BR-7020EP)

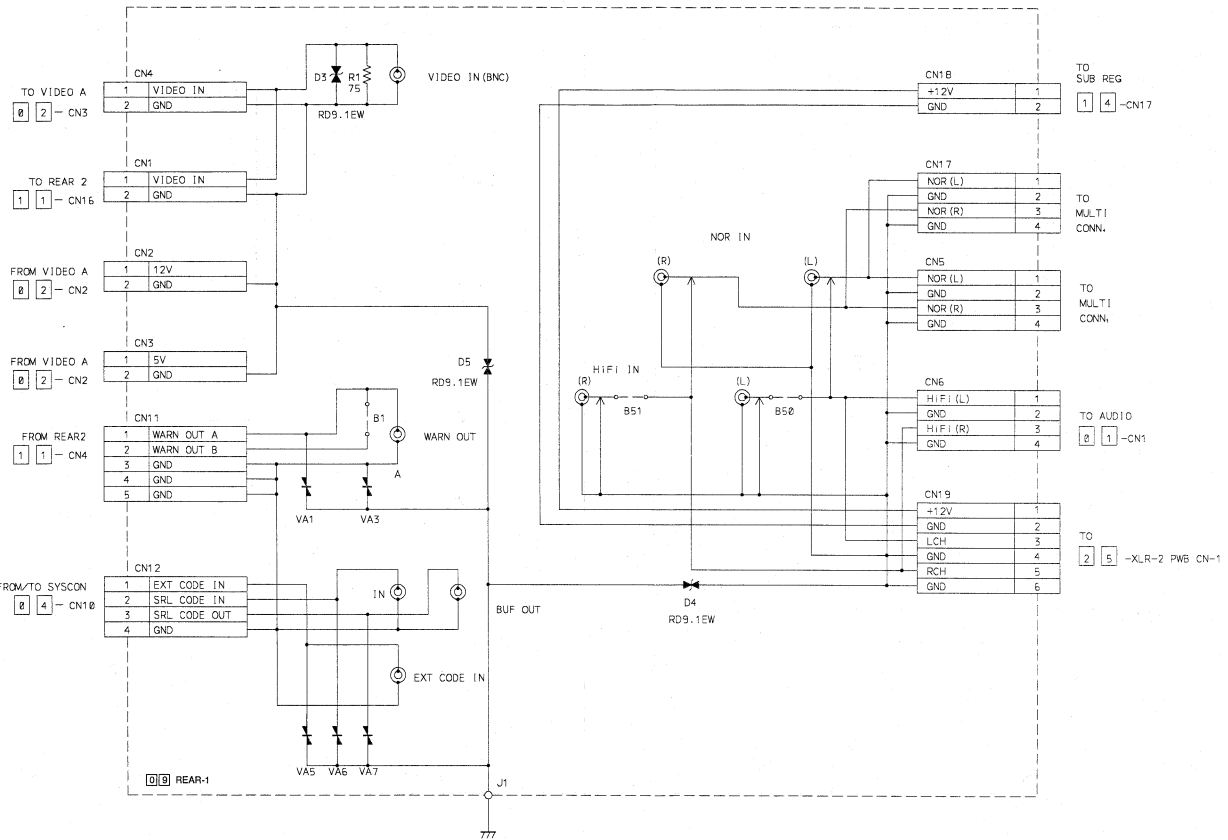
— BR-7020EP —



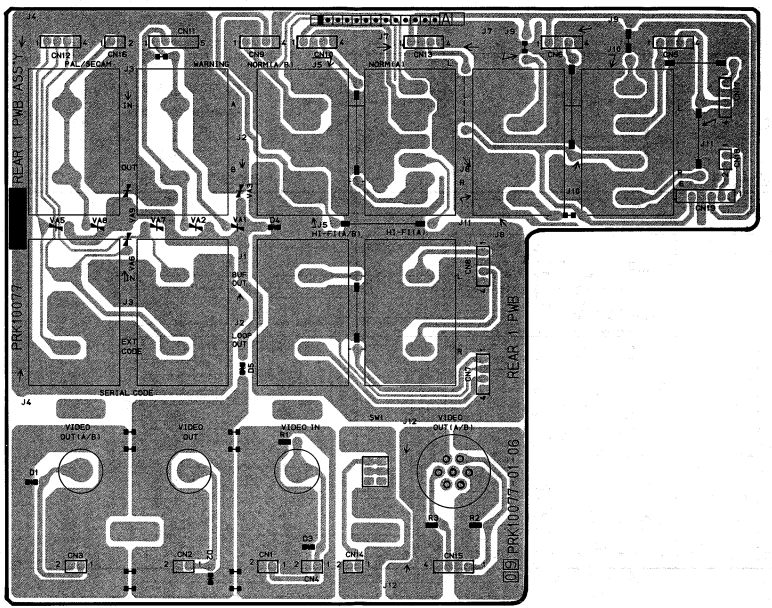
4.16 REAR-1 SCHEMATIC DIAGRAM

— BR-7020EP —



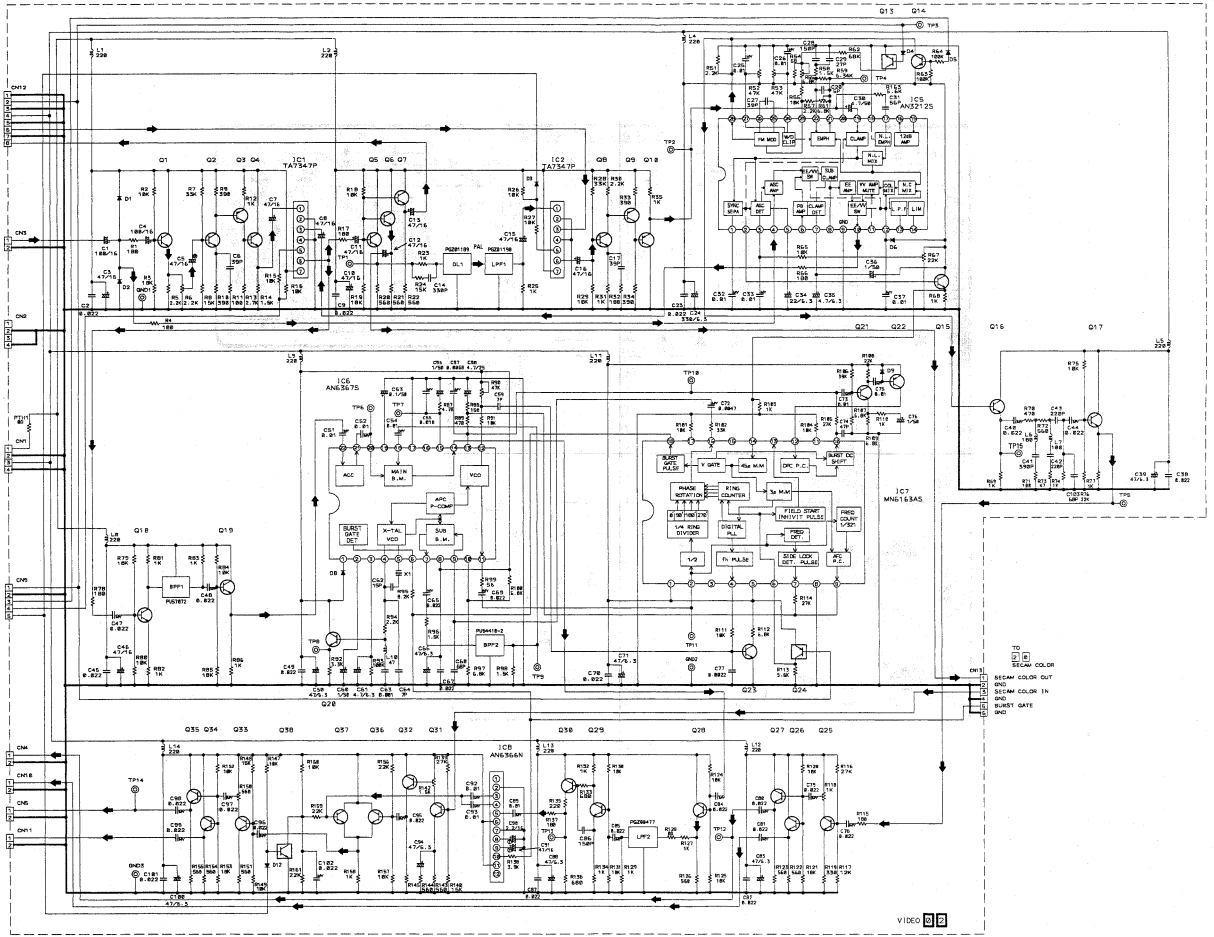

CN4
1 VIDEO IN
2 GND
TO VIDEO A
0 2 — CN3
D3
R1
75
VIDEO IN (BNC)
RD9.1EW
CN1
1 VIDEO IN
2 GND
TO REAR 2
1 1 — CN16
CN2
1 12V
2 GND
FROM VIDEO A
0 2 — CN2
CN3
1 5V
2 GND
FROM VIDEO A
0 2 — CN2
D5
RD9.1EW
CN11
1 WARN OUT A
2 WARN OUT B
3 GND
4 GND
5 GND
FROM REAR2
1 1 — CN4
B1
WARN OUT
A
VA1
VA3
CN12
1 EXT CODE IN
2 SRL CODE IN
3 SRL CODE OUT
4 GND
FROM/TO SYSCON
0 4 — CN10
IN
BUF OUT
EXT CODE IN
VA5
VA6
VA7
0 9 REAR-1
J1
777
CN18
+12V 1
GND 2
TO SUB REG
1 4 —CN17
CN17
NOR (L) 1
GND 2
NOR (R) 3
GND 4
TO MULTI CONN.
NOR IN
(R)
(L)
CN5
NOR (L) 1
GND 2
NOR (R) 3
GND 4
TO MULTI CONN.
HIFI IN
(R)
(L)
B51
B50
CN6
HIFI (L) 1
GND 2
HIFI (R) 3
GND 4
TO AUDIO
0 1 —CN1
CN19
+12V 1
GND 2
LCH 3
GND 4
RCH 5
GND 6
TO
2 5 —XLR-2 PWB CN-1
D4
RD9.1EW

4.17 REAR-1 CIRCUIT BOARD



4.18 VIDEO A SCHEMATIC DIAGRAM (BR-7020E/ED)

— BR-7020E/ED —



VIDEO A<02> -BR-7020E/ED-

SYMBOL No.		REC mode
INTEGRATED CIRCUIT		
IC1	1	8.2
	2	0
	3	8.2
	4	0
	5	7.8
	6	0
	7	11.8
IC2	1	8.1
	2	0
	3	8.1
	4	0
	5	0.8
	6	0
	7	11.8
IC5	1	2.7
	2	0.4
	3	2.4
	4	2.6
	5	2.3
	6	0
	7	1.4
	8	0
	9	0
	10	0.1
	11	0
	12	4.5
	13	0
	14	—
	15	—
	16	—
	17	3.2
	18	0
	19	4.0
	20	3.0
	21	0
	22	2.1
	23	4.2
	24	4.2
	25	4.2
	26	4.2
	27	3.3
	28	0
IC6	1	4.5
	2	3.2
	3	3.2
	4	3.2
	5	3.4
	6	0
	7	5.1
	8	4.0
	9	4.0
	10	4.1
	11	4.0
	12	0
	13	2.7
	14	0
	15	0
	16	0.1
	17	2.1
	18	2.2
	19	3.2
	20	3.2
	21	3.2
	22	3.0
IC7	1	5.2
	2	2.7
	3	0
	4	0.3
	5	0
	6	3.2
	7	3.2
	8	2.6
	9	0
	10	2.6
	11	0
	12	0.1
	13	0
	14	0.3
	15	0
	16	2.6
	17	0
	18	4.8

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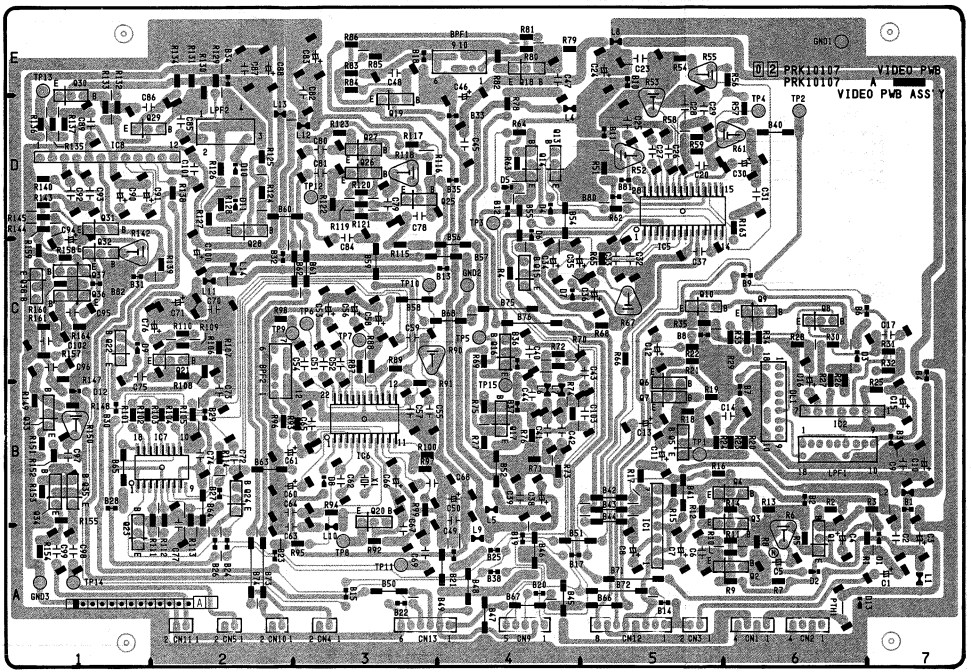
4.19 VIDEO A CIRCUIT BOARD (BR-7020E/ED)

— BR-7020E/ED —

SYMBOL No.		REC mode
IC8	1	—
	2	0.
	3	0.
	4	0.
	5	0.
	6	0.
	7	2.
	8	2.
	9	5.
	10	0.
	11	5.
	12	—
TRANSISTOR		
Q1	B	7.2
	C	11.7
	E	6.5
Q2	B	3.2
	C	9.5
	E	2.5
Q3	B	0.3
	C	4.7
	E	10.0
Q4	B	4.7
	C	11.8
	E	4.0
Q5	B	6.1
	C	11.6
	E	5.4
Q6	B	6.1
	C	11.6
	E	5.4
Q7	B	6.1
	C	11.6
	E	5.4
Q8	B	2.8
	C	7.0
	E	1.9
Q9	B	7.6
	C	3.4
	E	8.2
Q10	B	3.4
	C	1.
	E	4.1
Q13	B	0.
	C	0.
	E	0.
Q14	B	5.0
	C	3.3
	E	8.0
Q15	B	0.4
	C	3.0
	E	3.4
Q16	B	3.3
	C	0.1
	E	0.
Q17	B	3.4
	C	2.4
	E	2.7
Q18	B	4.1
	C	4.5
	E	3.4
Q19	B	7.3
	C	0.
	E	6.6
Q20	B	2.9
	C	5.1
	E	2.2
Q21	B	0.8
	C	4.6
	E	0.

SYMBOL No.		REC mode
Q22	B	4.6
	C	0.
	E	5.2
Q23	B	0.
	C	4.8
	E	0.
Q24	B	2.2
	C	0.
	E	5.1
Q25	B	1.4
	C	3.1
	E	0.
Q26	B	2.9
	C	5.7
	E	2.2
Q27	B	2.9
	C	5.7
	E	2.2
Q28	B	2.7
	C	5.2
	E	2.0
Q29	B	1.9
	C	0.8
	E	1.3
Q30	B	3.8
	C	3.1
	E	3.1
Q31	B	1.7
	C	2.4
	E	1.0
Q32	B	3.3
	C	0.
	E	2.6
Q33	B	1.9
	C	0.4
	E	1.2
Q34	B	2.9
	C	0.
	E	2.1
Q35	B	2.9
	C	5.7
	E	2.1
Q36	B	1.6
	C	1.0
	E	2.2
Q37	B	3.0
	C	5.2
	E	2.2
Q38	B	0.7
	C	3.3
	E	0.
CONNECTOR		
CN1	1	11.8
	2	0.
	3	12.2
	4	0.
CN3	1	0.
	2	0.
CN4	1	0.
	2	0.
CN5	1	0.
	2	0.
CN9	1	2.8
	2	0.
	3	12.2
	4	5.0
	5	0.2

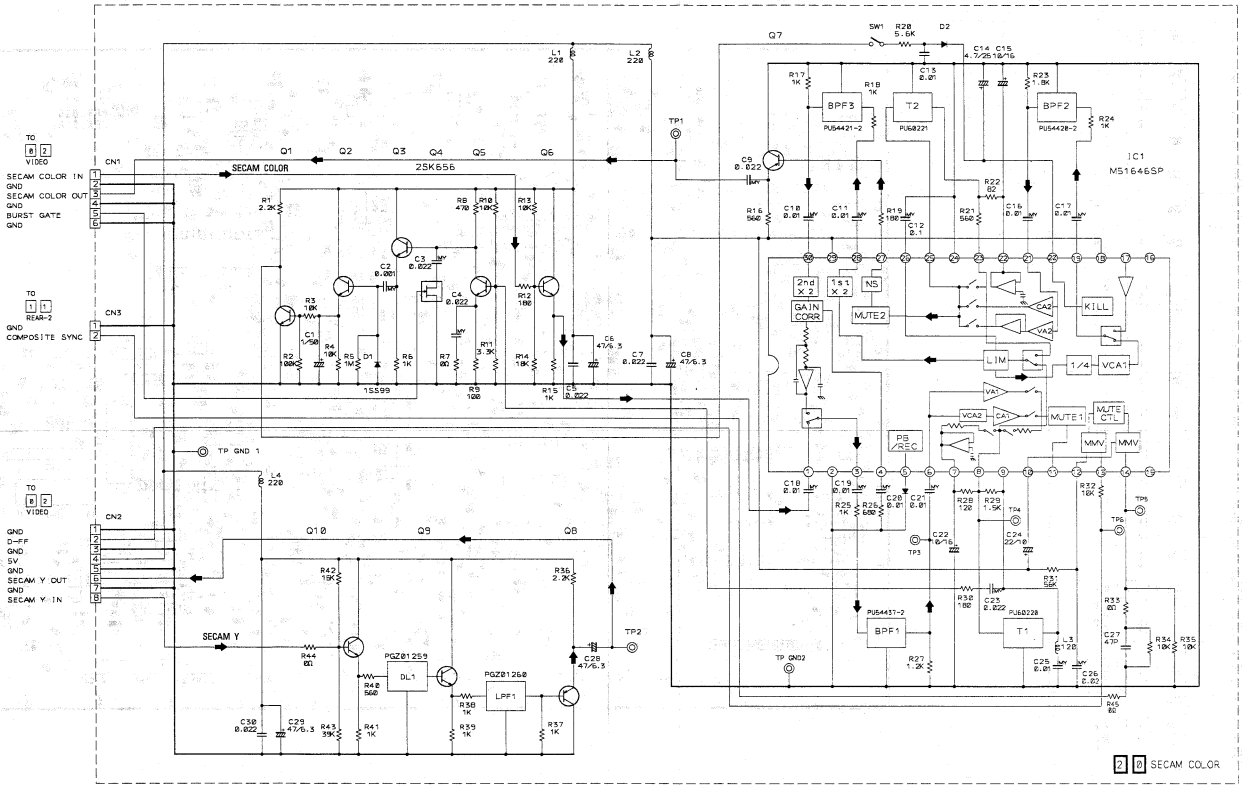
SYMBOL No.		REC mode
CN10	1	0.
	2	0.
CN11	1	0.
	2	0.
CN12	1	0.
	2	5.
	3	0.
	4	5.
	5	0.
	6	3.
	7	0.
	8	3.
	9	0.
	10	3.
	11	0.
	12	3.
CN13	1	3.2
	2	0.
	3	7.
	4	4.8
	5	0.



TP1	TP2	TP3	TP4	TP5	TP6	TP8	TP9	TP11	TP12	TP13	TP14
REC 1.0 Vp-p	REC 1.0 Vp-p	REC 4.5 Vp-p	REC 0.65 Vp-p (pulse & bar)	REC 0.4 Vp-p	REC 0.45 Vp-p	REC 0.5 Vp-p	REC 0.15 Vp-p	REC 0.8 Vp-p	REC 0.7 Vp-p	REC 0.2 Vp-p	REC 0.3 Vp-p

4.20 SECAM COLOR SCHEMATIC DIAGRAM (BR-7020ED only)

— BR-7020ED only —



TP1	TP2	TP3	TP4	TP5	TP6
REC 0.25 Vp-p	REC 0.5 Vp-p	REC 0.2 Vp-p	REC 0.2 Vp-p	REC 2.5 Vp-p	REC 4.5 Vp-p

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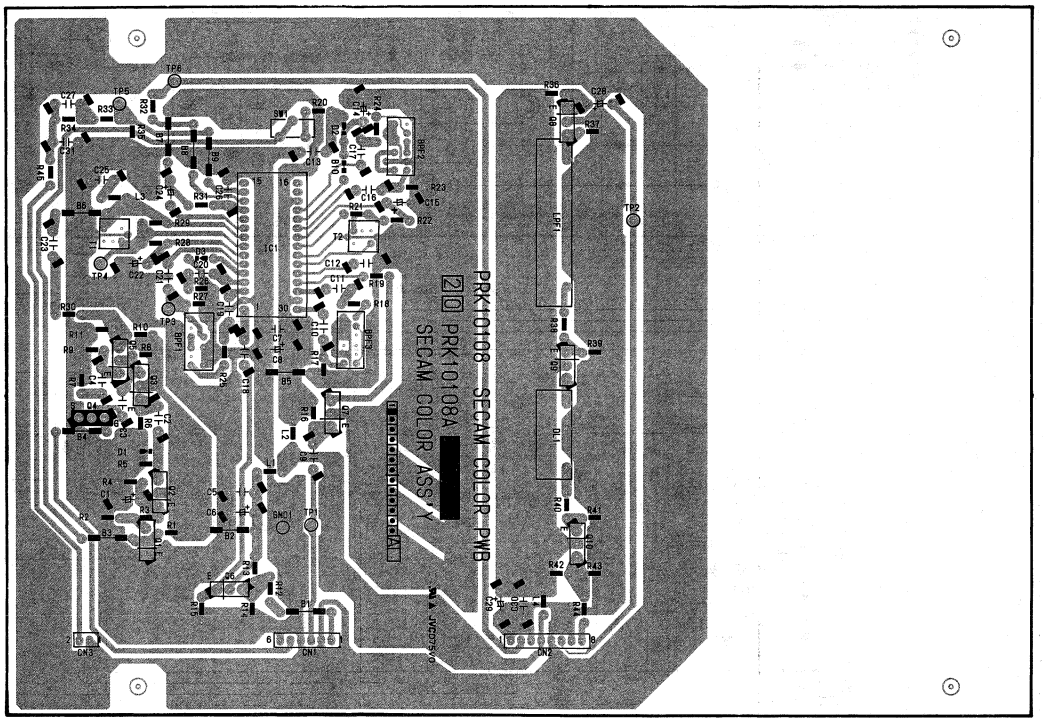
4.21 SECAM COLOR CIRCUIT BOARD (BR-7020ED only)

— BR-7020ED only —

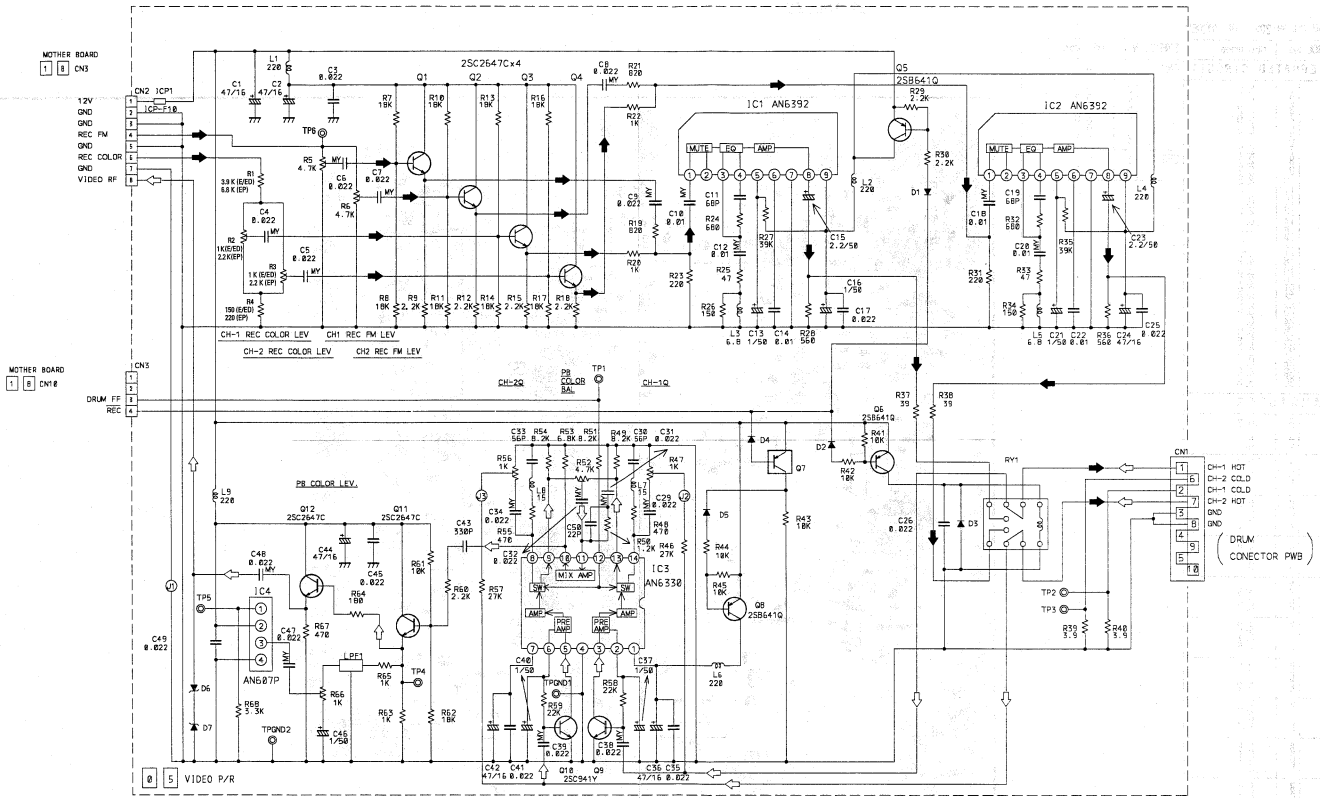
SECAM COLOR<20> -BR-7020ED-

SYMBOL No.		REC mode
INTEGRATED CIRCUIT		
IC1	1	2.2
	2	0.5
	3	2.2
	4	3.0
	5	0.5
	6	3.0
	7	2.7
	8	2.7
	9	2.7
	10	3.5
	11	—
	12	0.2
	13	2.2
	14	0.5
	15	—
	16	—
	17	—
	18	4.9
	19	2.5
	20	2.7
	21	2.9
	22	2.9
	23	3.0
	24	3.0
	25	3.0
	26	2.6
	27	2.5
	28	4.9
	29	4.9
	30	3.3
TRANSISTOR		
Q1	B	0.7
	E	0.
Q2	B	0.3
	E	1.5
Q3	B	2.9
	E	2.1
Q4	G	4.8
	S	0.
Q5	B	1.2
	E	0.5
Q6	B	3.2
	E	2.5
Q7	B	2.5
	E	3.2
Q8	B	1.0
	E	1.7
Q9	B	2.8
	E	2.1
Q10	B	3.5
	E	2.8
CONNECTOR		
CN1	1	3.2
	2	0.7
	3	0.
	4	4.8
	5	0.
	6	

SYMBOL No.		REC mode
CN2	1	0.
	2	2.5
	3	0.
	4	5.2
	5	0.
	6	8.0
	7	0.
	8	3.5
CN3	1	0.
	2	0.4



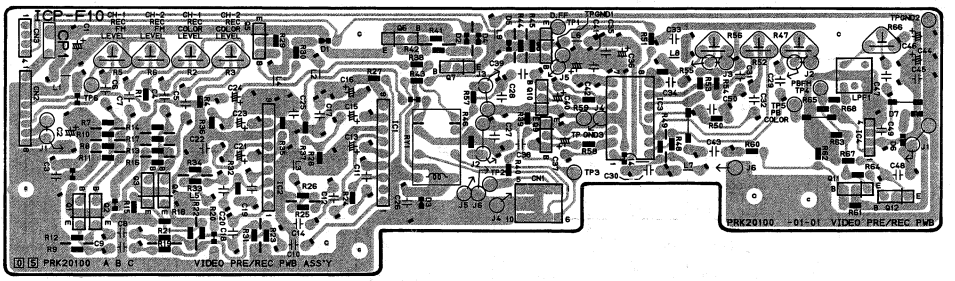
4.22 VIDEO PRE/REC SCHEMATIC DIAGRAM



TP1	TP2, 3	TP4	TP5	TP6
REC/PB 4 Vp-p	REC 70 mVp-p	PB 0.5 Vp-p	PB 0.2 Vp-p	REC 0.7 Vp-p

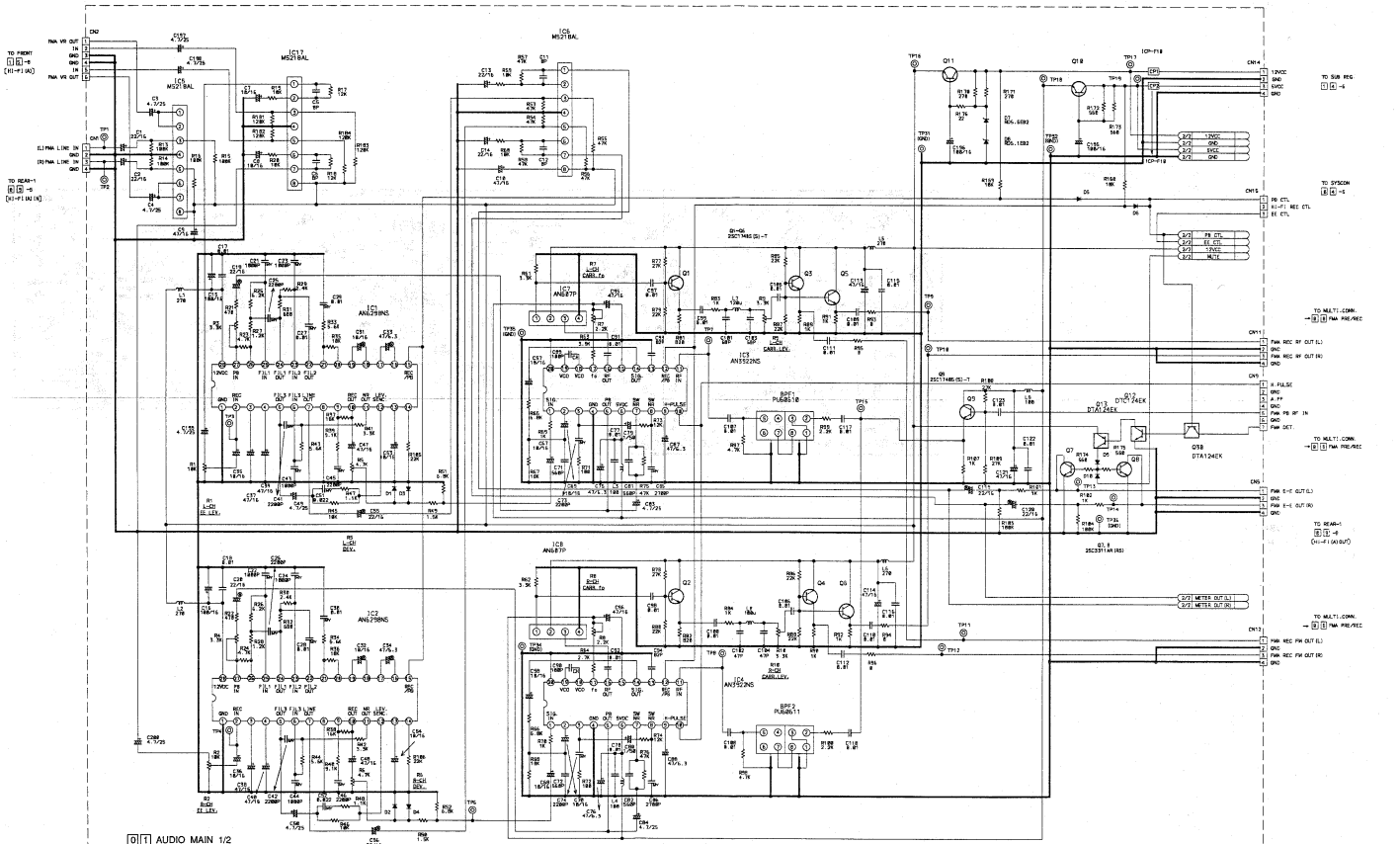
- DC voltage (1/1) - ([05] VIDEO PRE/REC)

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	5.6	0.0
	2	11.0	0.0
	3	5.6	0.0
	4	5.6	0.0
	5	6.2	0.0
	6	5.6	0.2
	7	0.0	0.0
	8	5.7	0.2
	9	11.1	0.0
IC2	1	5.6	0.0
	2	11.0	0.0
	3	5.6	0.0
	4	5.6	0.0
	5	6.2	0.0
	6	5.6	0.2
	7	0.0	0.0
	8	5.6	0.2
	9	11.0	0.0
IC3	1	0.4	11.2
	2	0.0	0.8
	3	0.1	2.0
	4	0.0	0.0
	5	0.1	2.0
	6	0.0	0.8
	7	0.6	6.4
	8	0.0	3.4
	9	0.1	8.3
	10	0.0	6.8
	11	0.2	2.1
	12	0.6	1.0
	13	0.1	8.3
	14	0.0	3.2
IC14	1	0.0	6.1
	2	11.4	11.5
	3	2.7	2.7
	4	0.0	0.0
TRANSISTOR			
Q1	B	5.6	5.7
	C	11.5	11.6
	E	4.9	5.0
Q2	B	5.6	5.6
	C	11.5	11.6
	E	4.9	5.0
Q3	B	5.4	5.4
	C	11.5	11.6
	E	4.7	4.7
Q4	B	5.4	5.4
	C	11.5	11.6
	E	4.7	4.7
Q5	B	10.7	11.7
	C	11.3	0.0
	E	11.6	11.7
Q6	B	10.8	11.7
	C	11.4	0.0
	E	11.6	11.7
Q7	B	1.1	11.6
	C	11.5	5.2
	E	11.6	11.7
Q8	B	11.5	10.9
	C	0.4	11.3
	E	11.6	11.7
Q9	B	0.0	0.6
	C	0.2	2.0
	E	0.0	0.0
Q10	B	0.0	0.6
	C	0.2	2.0
	E	0.0	0.0
Q11	B	7.0	7.1
	C	11.4	11.5
	E	6.3	6.4
Q12	B	6.3	6.4
	C	11.4	11.5
	E	5.6	5.6
CONNECTOR			
CN1	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	0.0	0.0
	9	0.0	0.0
	10	0.0	0.0
CN2	1	11.6	11.7
	2	0.0	0.0
	3	0.0	0.0
	4	2.5	2.4
	5	0.0	0.0
	6	2.4	2.4
	7	0.0	0.0
	8	0.0	0.0
CN3	3	2.1	2.2
	4	0.6	11.4



4.24 AUDIO MAIN SCHEMATIC DIAGRAM

— BR-7020EP —



4-32

- DC voltage (1/2) - ([01] AUDIO MAIN (P))

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	0.0	0.0
	2	5.0	5.0
	3	5.0	5.0
	4	5.0	5.0
	5	5.0	P
	6	5.0	P
	7	5.0	P
	8	0.0	0.0
	9	5.0	P
	10	5.0	P
	11	0.0	P
	12	0.9	0.9
	13	0.5	0.7
	14	0.2	0.2
	15	12.3	0.8
	16	5.0	5.0
	17	5.0	5.0
	18	5.0	P
	19	5.0	P
	20	5.0	P
	21	5.0	P
	22	5.0	P
	23	5.0	P
	24	5.0	P
	25	5.0	P
	26	5.0	P
	27	5.0	5.1
	28	10.0	10.0
IC2	1	0.0	0.0
	2	5.0	5.0
	3	5.0	5.0
	4	5.0	5.0
	5	5.0	P
	6	5.0	P
	7	5.0	P
	8	0.0	0.0
	9	5.0	P
	10	5.0	P
	11	5.0	P
	12	0.9	0.9
	13	0.5	0.7
	14	0.1	0.1
	15	12.3	0.8
	16	5.0	5.0
	17	5.0	5.0
	18	5.0	P
	19	5.0	P
	20	5.0	P
	21	5.0	P
	22	5.0	P
	23	5.0	P
	24	5.0	P
	25	5.0	P
	26	5.0	P
	27	5.0	5.0
	28	10.0	10.0

SYMBOL No.		REC	PB
IC3	1	2.3	2.7
	2	3.0	2.7
	3	0.0	P
	4	0.0	0.0
	5	2.0	1.9
	6	4.4	4.3
	7	2.3	2.2
	8	0.0	P
	9	2.5	2.2
	10	3.2	3.4
	11	2.9	2.7
	12	4.9	0.7
	13	2.9	2.7
	14	2.9	2.1
	15	0.0	0.0
	16	2.8	3.1
	17	3.4	3.3
	18	3.6	3.5
	19	3.6	3.5
	20	0.0	0.0
IC4	1	2.3	P
	2	3.1	2.7
	3	0.0	P
	4	0.0	0.0
	5	2.2	P
	6	4.4	4.3
	7	2.3	2.2
	8	0.0	P
	9	2.5	2.2
	10	3.3	3.4
	11	2.9	2.7
	12	4.9	0.7
	13	2.9	2.8
	14	2.9	2.2
	15	0.0	0.0
	16	2.8	3.1
	17	3.4	3.3
	18	3.6	3.5
	19	3.6	3.5
	20	0.0	0.0
IC5	1	5.0	5.0
	2	5.0	5.0
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	5.0
	7	5.0	5.0
	8	10.0	10.0
IC6	1	5.0	P
	2	5.0	5.0
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	P
	7	5.0	P
	8	10.0	10.0
IC7	1	5.9	5.4
	2	9.9	9.9
	3	2.5	2.5
	4	0.0	0.0

SYMBOL No.		REC	PB
IC8	1	6.2	5.5
	2	9.9	9.9
	3	2.4	2.4
	4	0.0	0.0
IC9	1	4.7	4.8
	2	4.7	4.7
	3	4.7	4.7
	4	4.7	4.7
	5	4.7	4.7
	6	4.8	4.8
	7	0.0	0.0
	8	0.0	0.0
	9	0.1	0.1
	10	2.5	2.5
	11	0.9	0.9
	12	0.0	0.0
	13	2.5	2.5
	14	4.9	5.0
	15	0.6	2.4
	16	2.5	2.5
	17	0.0	0.0
	18	0.4	0.4
	19	4.9	4.9
	20	2.5	2.5
	21	2.5	2.5
	22	0.0	0.0
	23	0.0	0.0
	24	4.8	4.8
	25	4.8	4.7
	26	4.7	4.7
	27	4.7	4.7
	28	4.7	4.7
	29	4.8	4.8
	30	0.1	0.1
	31	4.9	4.9
	32	4.9	4.9
	33	4.7	4.7
	34	0.0	0.0
	35	4.7	4.7
	36	4.9	4.9
	37	4.7	4.7
	38	2.5	2.5
	39	0.0	0.2
	40	4.7	4.7
	41	4.8	4.8
	42	4.8	4.8
	43	4.8	4.8
	44	9.8	9.9
	45	0.0	0.0
	46	4.8	4.8
	47	4.8	4.8
	48	9.8	9.9
	49	2.3	2.3
	50	2.3	2.3
	51	2.3	2.3
	52	2.3	2.3
	53	9.0	9.1
	54	2.3	2.3
	55	2.3	2.3
	56	4.7	4.7
	57	4.9	4.9
	58	0.1	0.1

SYMBOL No.		REC	PB
IC10	1	0.6	11.8
	2	5.0	5.0
	3	5.0	5.0
	4	5.0	5.0
	5	0.0	0.0
	6	10.0	10.0
	7	5.0	P
	8	5.0	5.0
	9	5.0	5.0
	10	0.6	11.8
IC11	1	2.0	2.0
	2	5.0	5.0
	3	5.0	5.0
	4	5.0	5.0
	5	0.0	0.0
	6	10.0	10.2
	7	5.0	5.0
	8	5.1	5.1
	9	5.0	5.0
	10	2.0	2.0
IC12	1	0.6	11.8
	2	5.0	5.0
	3	4.9	5.0
	4	4.9	5.0
	5	0.0	0.0
	6	10.0	10.0
	7	5.0	5.0
	8	5.0	5.1
	9	5.0	5.0
	10	0.6	11.8
IC13	1	5.0	5.0
	2	5.0	5.0
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	5.0
	7	5.0	5.0
	8	10.0	10.0
IC14	1	5.0	5.0
	2	5.0	5.0
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	5.0
	7	5.0	5.0
	8	10.0	10.0
IC15	1	5.0	5.0
	2	5.0	5.0
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	5.0
	7	5.0	5.0
	8	10.0	10.0
IC16	1	5.0	5.0
	2	5.0	5.0
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	5.0
	7	5.0	5.0
	8	10.0	10.0

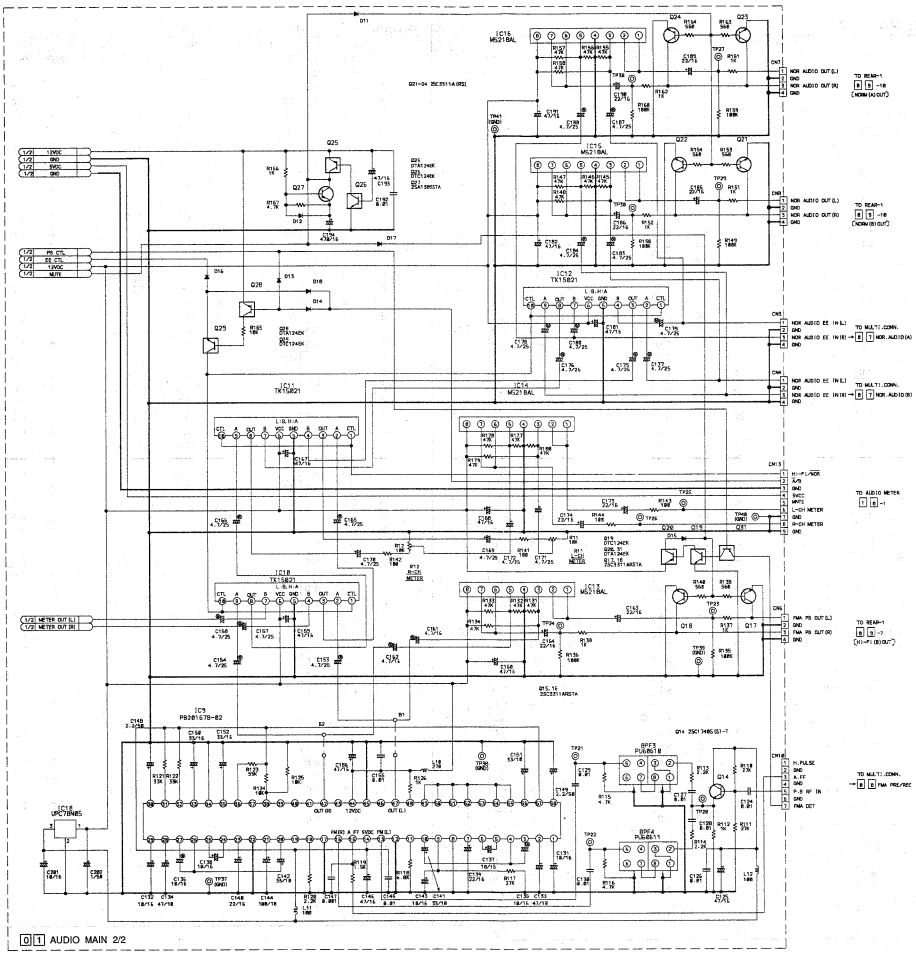
- DC voltage (2/2) - ([01] AUDIO MAIN (P))

SYMBOL No.		REC	PB
IC17	1	5.1	5.1
	2	5.1	5.1
	3	5.0	5.0
	4	0.0	0.0
	5	5.0	5.0
	6	5.0	5.0
	7	5.0	5.0
	8	10.0	10.0
IC18	1	10.0	10.0
	2	0.0	0.0
	3	5.0	5.0
TRANSISTOR			
Q1	B	4.3	4.3
	C	9.9	9.9
	E	4.1	3.6
Q2	B	4.3	4.3
	C	9.9	9.9
	E	4.1	3.7
Q3	B	4.7	4.8
	C	9.9	9.9
	E	4.1	4.1
Q4	B	4.7	4.7
	C	9.9	9.9
	E	4.1	4.1
Q5	B	4.7	4.8
	C	9.9	9.9
	E	4.1	4.1
Q6	B	4.7	4.7
	C	9.9	9.9
	E	4.1	4.1
Q7	B	0.0	0.8
	C	0.0	0.0
	E	0.0	0.0
Q8	B	0.0	0.8
	C	0.0	0.0
	E	0.0	0.0
Q10	B	5.0	5.0
	C	5.1	5.1
	E	4.4	4.3
Q11	B	10.7	10.7
	C	12.3	12.3
	E	10.0	10.0
Q12	B	0.0	3.6
	C	10.0	0.0
	E	0.0	0.0
Q13	B	10.0	0.0
	C	0.0	9.8
	E	10.0	10.0
Q17	B	0.0	0.8
	C	0.0	0.0
	E	0.0	0.0
Q18	B	0.0	0.8
	C	0.0	0.0
	E	0.0	0.0
Q19	B	0.0	3.6
	C	10.0	0.0
	E	0.0	0.0
Q20	B	10.0	0.0
	C	0.0	9.8
	E	10.0	10.0

SYMBOL No.		REC	PB
Q21	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q22	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q23	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q25	B	12.2	12.2
	C	0.0	0.1
	E	12.3	12.3
Q26	B	0.0	0.0
	C	12.2	12.2
	E	0.0	0.0
Q27	B	12.3	12.3
	C	0.0	0.1
	E	12.3	12.3
Q28	B	0.6	0.6
	C	12.3	12.3
	E	12.3	12.3
Q29	B	8.8	12.3
	C	0.6	11.8
	E	0.6	12.2
Q30	B	12.0	0.2
	C	0.0	3.6
	E	12.0	3.6
Q31	B	12.0	0.2
	C	0.0	3.6
	E	12.0	3.6

SYMBOL No.		REC	PB
CONNECTOR			
CN1	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
CN2	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
CN3	1	5.6	5.3
	2	0.0	0.0
	3	4.8	4.8
	4	0.0	0.0
CN4	1	5.4	5.6
	2	0.0	0.0
	3	5.5	5.5
	4	0.0	0.0
CN5	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
CN6	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
CN7	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
CN8	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
CN10	3	0.6	2.4
	5	0.0	0.0
	7	12.0	3.6
CN13	1	2.0	2.0
	2	0.0	0.0
	3	0.0	0.0
	4	5.0	5.0
	5	0.0	0.0
	6	3.8	3.8
	7	0.0	0.0
	8	3.8	3.8
	9	0.0	0.0
CN14	1	12.3	12.4
	2	0.0	0.0
	3	5.1	5.0
	4	0.0	0.0
CN15	1	12.0	0.2
	3	0.1	12.0

4-33



0 1 AUDIO MAIN 2/2

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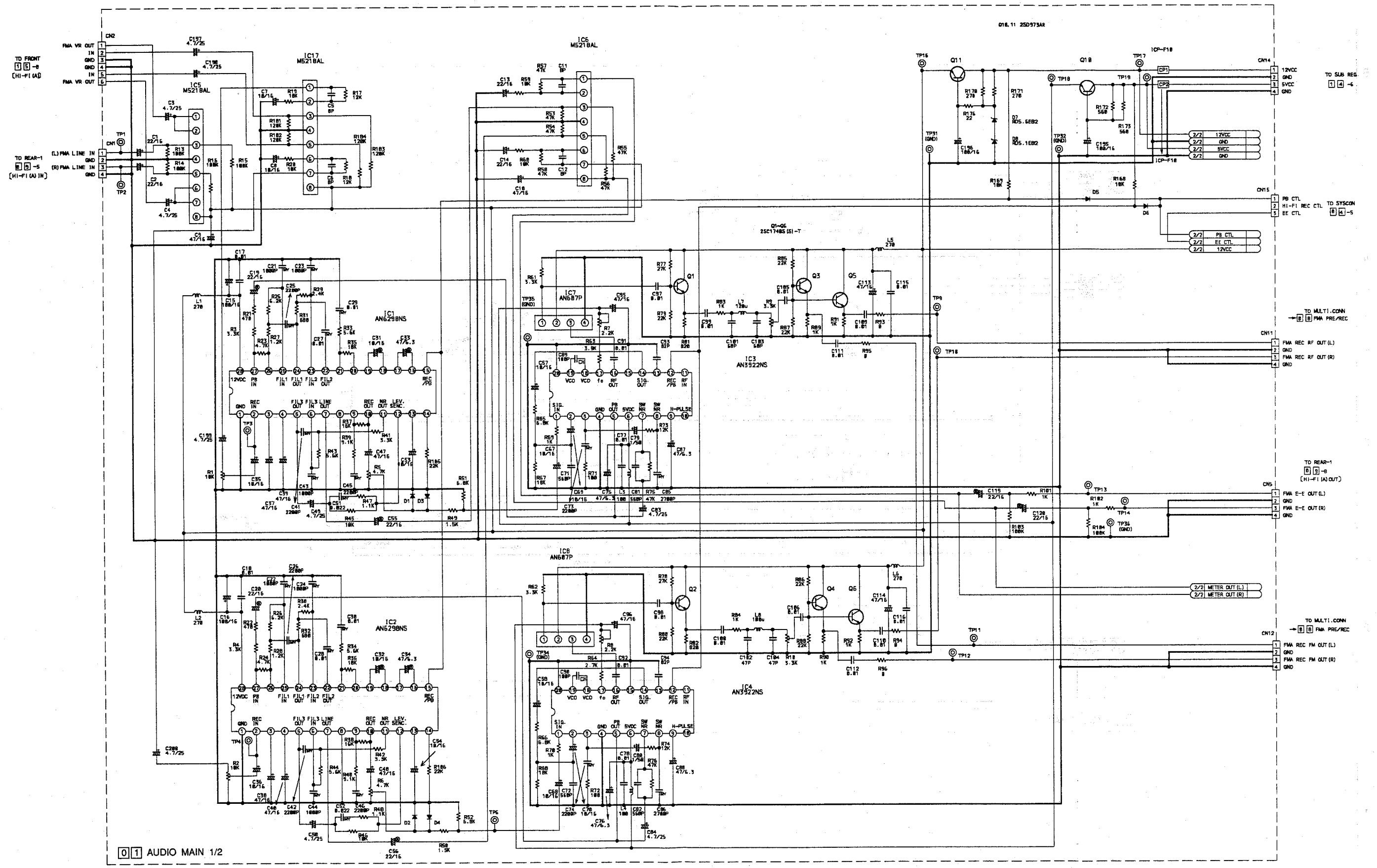
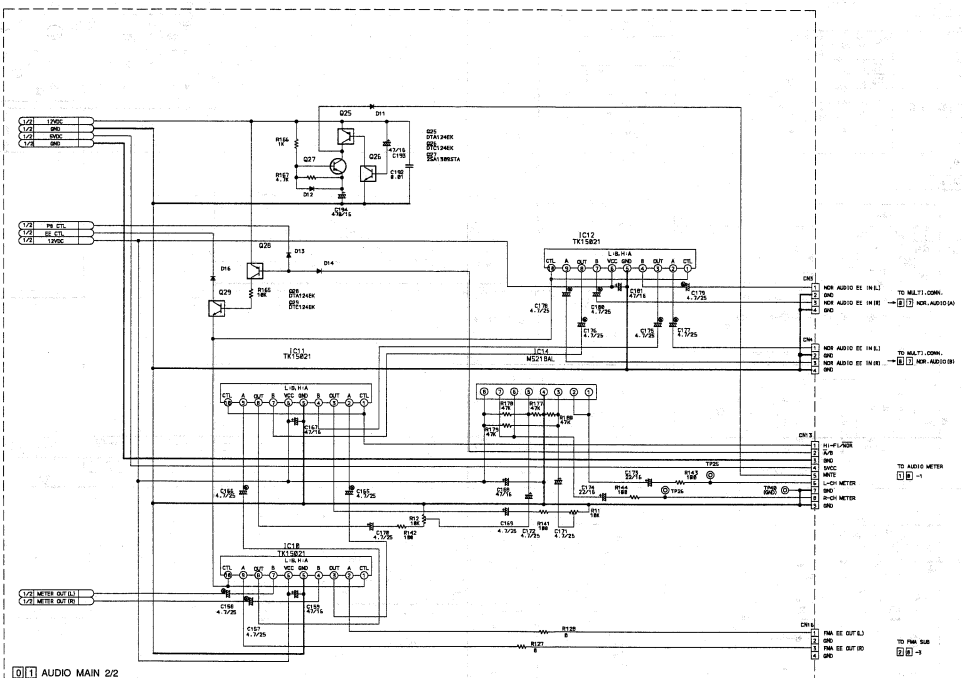
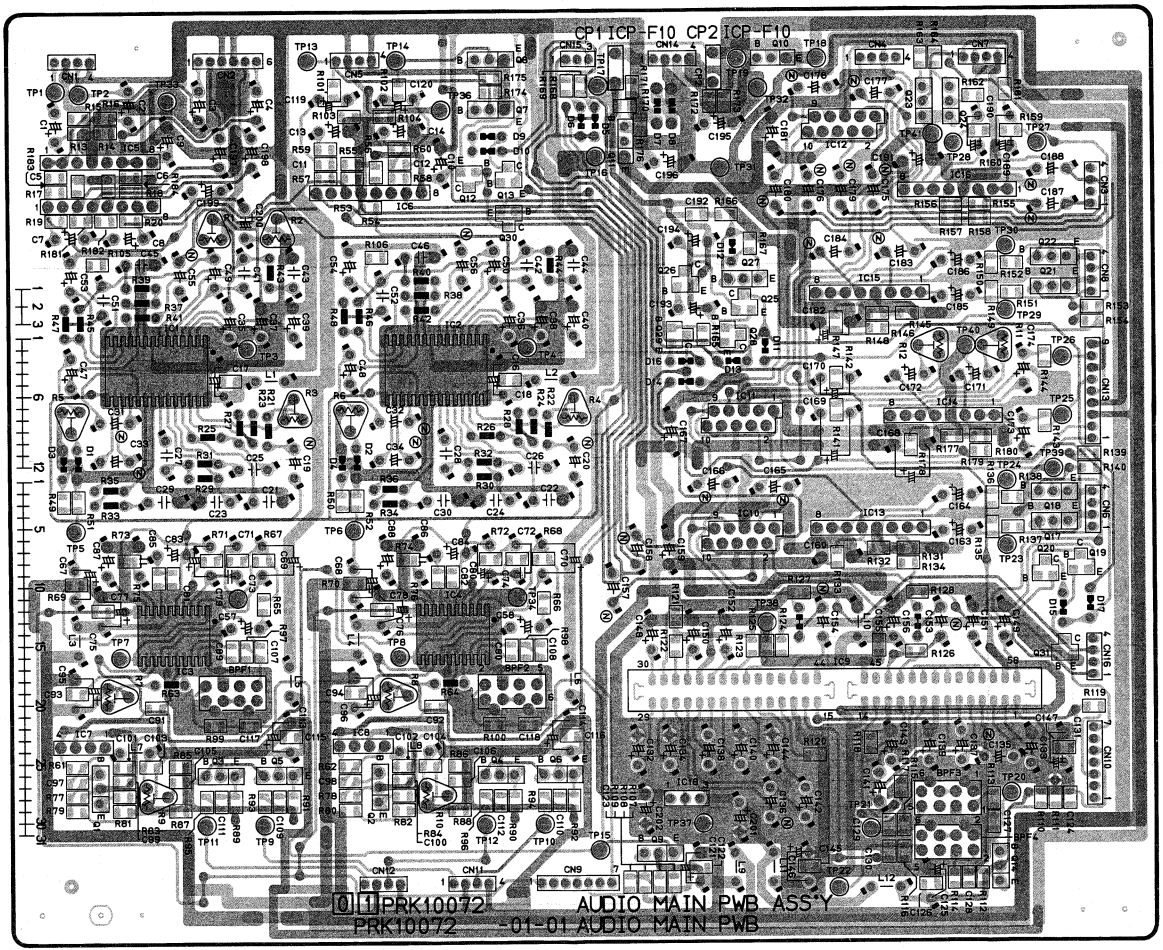
— BR-7020E/ED —

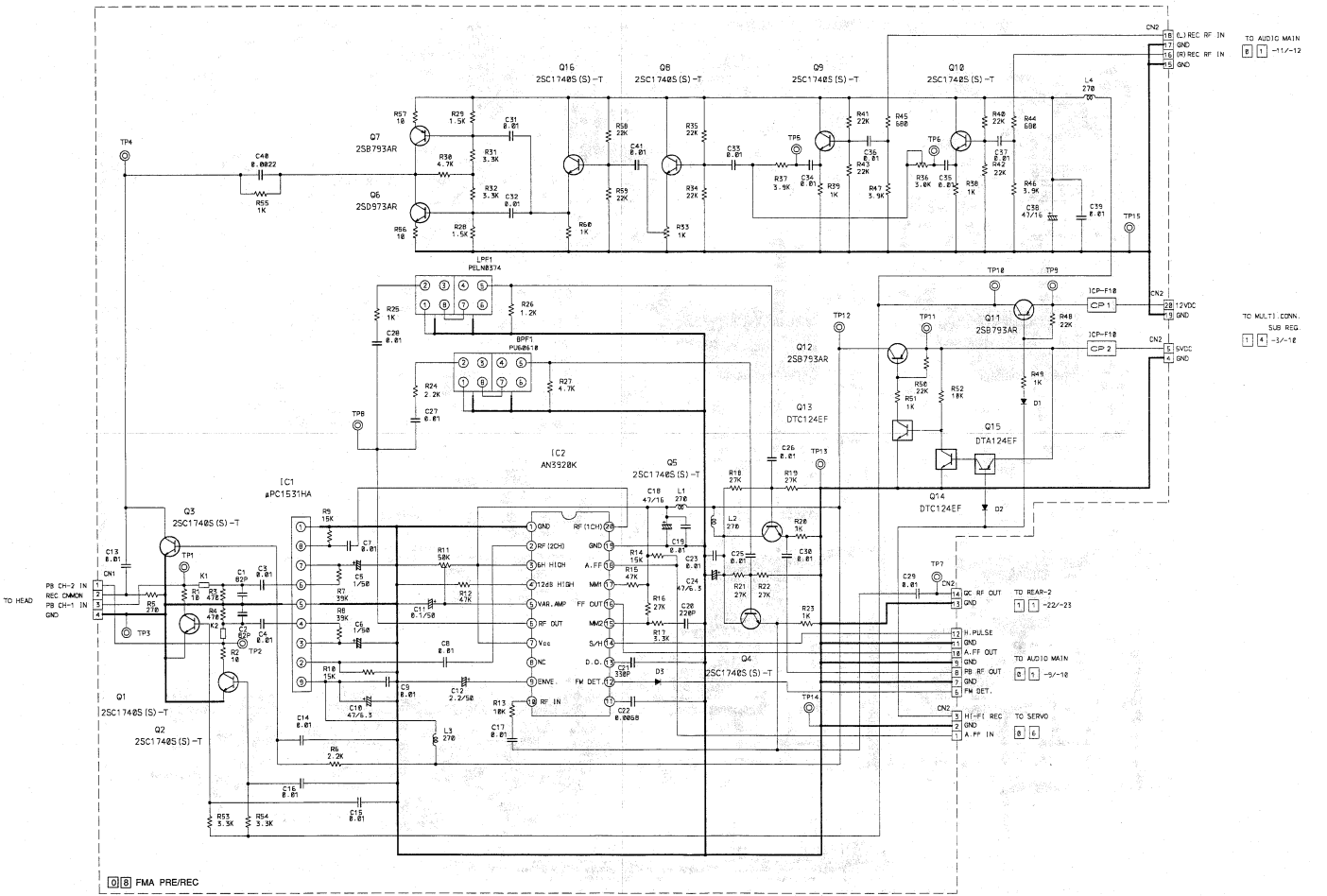

TO FRONT
1 5 -8
(HI-FI (A))
CN2
FMA VR OUT
IN
GND
GND
IN
FMA VR OUT
TO REAR-1
8 9 -5
(HI-FI (A) IN)
CN1
(L) FMA LINE IN
GND
(R) FMA LINE IN
GND
TP1
TP2
IC5
M5218AL
IC17
M5218AL
IC6
M5218AL
IC1
AN6298NS
IC2
AN6298NS
IC7
AN687P
IC8
AN687P
IC3
AN3922NS
IC4
AN3922NS
Q1~Q6
2SC1740S (S) -T
Q10, 11 2SD973AR
Q11
Q10
ICP-F10
CN14
12VCC
GND
5VCC
GND
TO SUB REG.
1 4 -6
CN15
PB CTL
HI-FI REC CTL
EE CTL
TO SYSCON
8 4 -5
TO MULTI.CONN
8 8 FMA PRE/REC
CN11
FMA REC RF OUT (L)
GND
FMA REC RF OUT (R)
GND
TO REAR-1
8 9 -8
(HI-FI (A) OUT)
CN5
FMA E-E OUT (L)
GND
FMA E-E OUT (R)
GND
2/2 METER OUT (L)
2/2 METER OUT (R)
TO MULTI.CONN
8 8 FMA PRE/REC
CN12
FMA REC FM OUT (L)
GND
FMA REC FM OUT (R)
GND
0 1 AUDIO MAIN 1/2


0 1 AUDIO MAIN 2/2
1/2 17VDC
1/2 GND
1/2 5VDC
1/2 GND
1/2 PB CTL
1/2 EE CTL
1/2 12VDC
1/2 METER OUT (L)
1/2 METER OUT (R)
Q25
Q26
Q27
Q28
Q29
D11
D12
D13
D14
D15
D16
IC12
TK15821
L-ch H-A
IC13
TK15821
L-ch H-A
IC14
MS218AL
IC15
TK15821
L-ch H-A
IC16
TK15821
L-ch H-A
CN5
NOR AUDIO EE IN (L)
GND
NOR AUDIO EE IN (R)
GND
TO MULTI. CONN.
NOR. AUDIO (A)
CN6
NOR AUDIO EE IN (L)
GND
NOR AUDIO EE IN (R)
GND
TO MULTI. CONN.
NOR. AUDIO (B)
CN3
H-FLASHER
5VS
GND
5VDC
MUTE
L-CH METER
GND
R-CH METER
GND
TP25
TP26
TO AUDIO METER
-1
CN4
FMA EE OUT (L)
GND
FMA EE OUT (R)
GND
TO FMA SUB
-1

4.25 AUDIO MAIN CIRCUIT BOARD



4.26 FMA PRE/REC SCHEMATIC DIAGRAM



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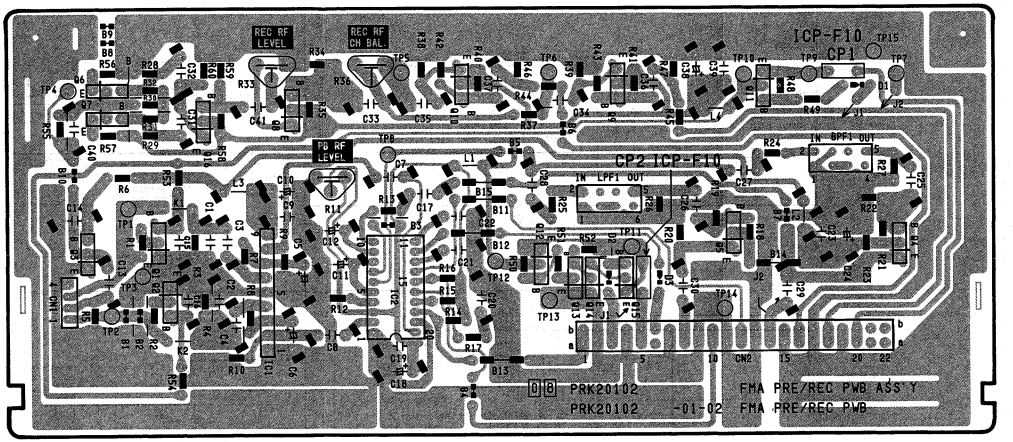
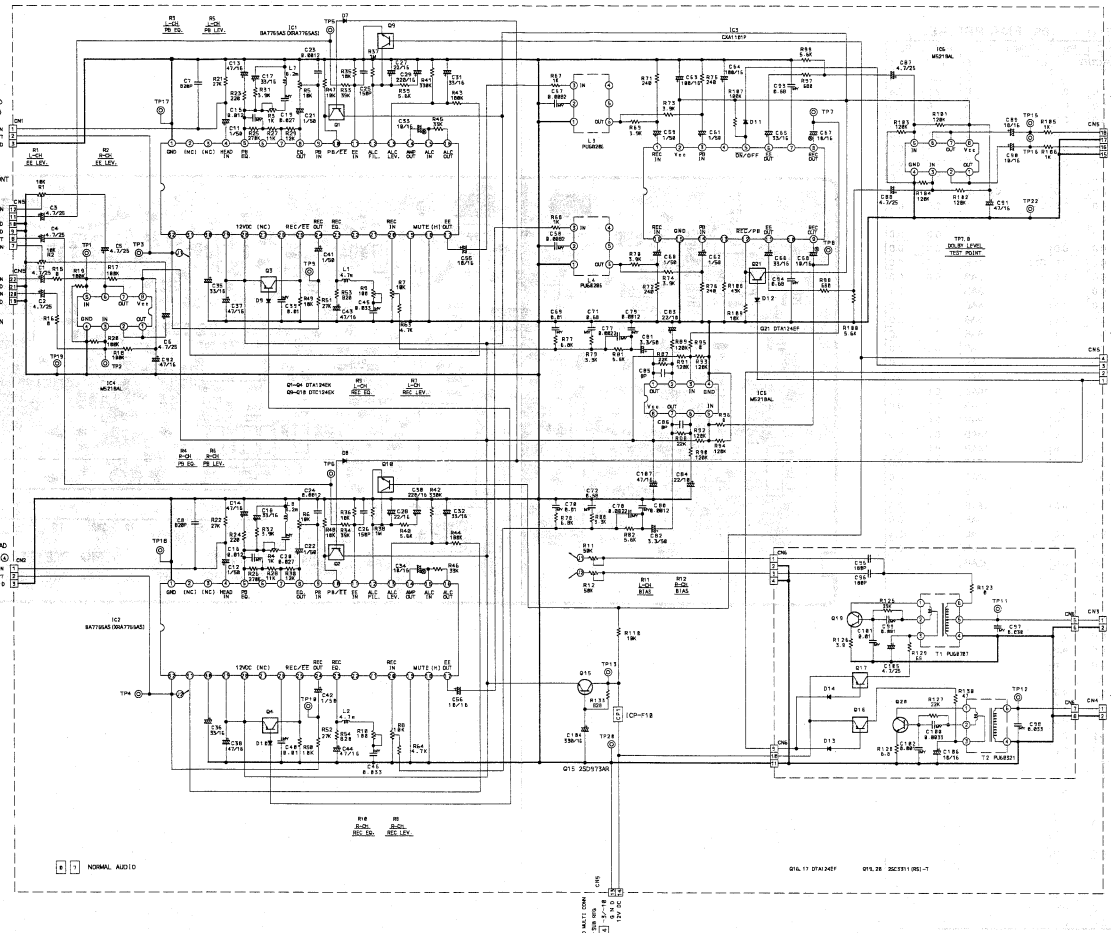
- DC voltage (1/1) - ([08] FMA PRE/REC)

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	0.0	0.0
	2	0.0	2.2
	3	0.0	0.7
	4	0.0	0.6
	5	0.0	0.0
	6	0.2	0.6
	7	0.0	0.7
	8	0.0	2.2
	9	0.0	4.9
IC2	1	0.0	0.0
	2	0.0	2.9
	3	0.0	4.8
	4	0.0	0.0
	5	0.0	2.9
	6	0.0	1.9
	7	0.0	4.8
	8	0.0	0.3
	9	0.0	2.8
	10	0.0	3.4
	11	0.0	1.5
	12	0.0	4.1
	13	0.0	2.3
	14	0.0	3.4
	15	0.0	0.1
	16	0.6	2.4
	17	0.0	0.0
	18	0.0	2.6
	19	0.0	0.0
	20	0.0	2.9
TRANSISTOR			
Q1	B	0.7	0.0
	C	0.0	0.0
	E	0.0	0.0
Q2	B	0.7	0.0
	C	0.0	0.0
	E	0.0	0.0
Q3	B	0.0	0.7
	C	6.1	0.0
	E	0.0	0.0
Q4	B	0.0	2.4
	C	0.0	4.9
	E	0.0	1.8
Q5	B	0.0	2.4
	C	0.0	4.9
	E	0.0	1.8
Q6	B	1.5	0.0
	C	6.2	0.0
	E	0.9	0.0
Q7	B	10.1	0.0
	C	6.1	0.0
	E	10.7	0.0
Q8	B	5.6	0.0
	C	11.5	0.0
	E	5.0	0.0
Q9	B	5.6	0.0
	C	11.5	0.0
	E	5.0	0.0
Q10	B	5.6	0.0
	C	11.5	0.0
	E	5.0	0.0
Q11	B	11.5	12.4
	C	12.2	0.0
	E	12.3	12.4
Q12	B	5.0	4.3
	C	0.0	5.0
	E	5.1	5.0
Q16	B	5.6	0.0
	C	11.5	0.0
	E	5.0	0.0
CONNECTOR			
CN1	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
CN2	1AB	0.0	2.6
	2AB	0.0	0.0
	3AB	1.1	12.1
	4AB	0.0	0.0
	5AB	5.1	5.0
	6AB	12.0	3.6
	7AB	0.0	0.0
	8AB	0.0	0.0
	9AB	0.0	0.0
	10AB	0.6	2.4
	11AB	0.0	0.0
	12AB	0.0	3.4
	13AB	0.0	0.0
	14AB	0.0	0.0
	15AB	0.0	0.0
	16AB	0.0	0.0
	17AB	0.0	0.0
	18AB	0.0	0.0
	19AB	0.0	0.0
	20AB	12.3	12.4
	21AB	0.0	0.0
	22AB	0.0	0.0



4.28 NORMAL AUDIO SCHEMATIC DIAGRAM

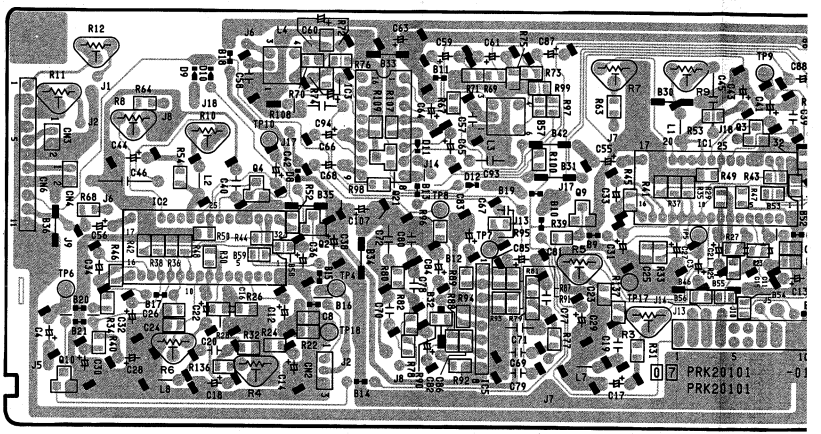


– DC voltage (1/1) – ([07] NORMAL AUDIO)

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	0.0	0.0
	2	10.8	7.9
	3	0.0	0.0
	4	2.0	2.0
	5	2.0	2.0
	6	2.0	2.0
	7	2.0	2.0
	8	2.0	2.0
	9	0.0	0.0
	10	0.3	11.5
	11	0.0	0.0
	12	0.0	0.0
	13	8.3	8.1
	14	5.6	5.6
	15	5.5	5.5
	16	5.5	5.5
	17	5.6	5.6
	18	0.0	0.0
	19	0.0	0.0
	20	0.0	0.0
	21	0.0	0.0
	22	0.0	0.0
	23	0.6	0.6
	24	5.4	5.4
	25	11.5	0.0
	26	11.4	0.0
	27	10.3	0.0
	28	11.5	11.5
	29	11.5	11.5
	30	11.4	11.4
	31	10.8	10.7
	32	0.0	0.0
IC3	1	5.9	5.9
	2	11.5	11.5
	3	5.8	5.9
	4	5.9	5.9
	5	11.4	11.4
	6	6.0	6.0
	7	0.4	0.4
	8	5.9	5.9
	9	5.9	5.9
	10	0.4	0.4
	11	5.9	6.0
	12	1.3	11.4
	13	1.2	1.2
	14	5.8	5.9
	15	0.0	0.0
	16	5.9	5.9
IC4	1	5.7	5.8
	2	5.7	5.8
	3	5.7	5.7
	4	0.0	0.0
	5	5.7	5.7
	6	5.8	5.8
	7	5.8	5.8
	8	11.5	11.5
IC5	1	5.8	5.8
	2	5.8	5.8
	3	5.8	5.8
	4	0.0	0.0
	5	5.7	5.7
	6	5.8	5.8
	7	5.8	5.8
	8	11.5	11.5
IC6	1	5.8	5.8
	2	5.8	5.8
	3	5.7	5.8
	4	0.0	0.0
	5	5.7	5.7
	6	5.7	5.8
	7	5.7	5.8
	8	11.5	11.5

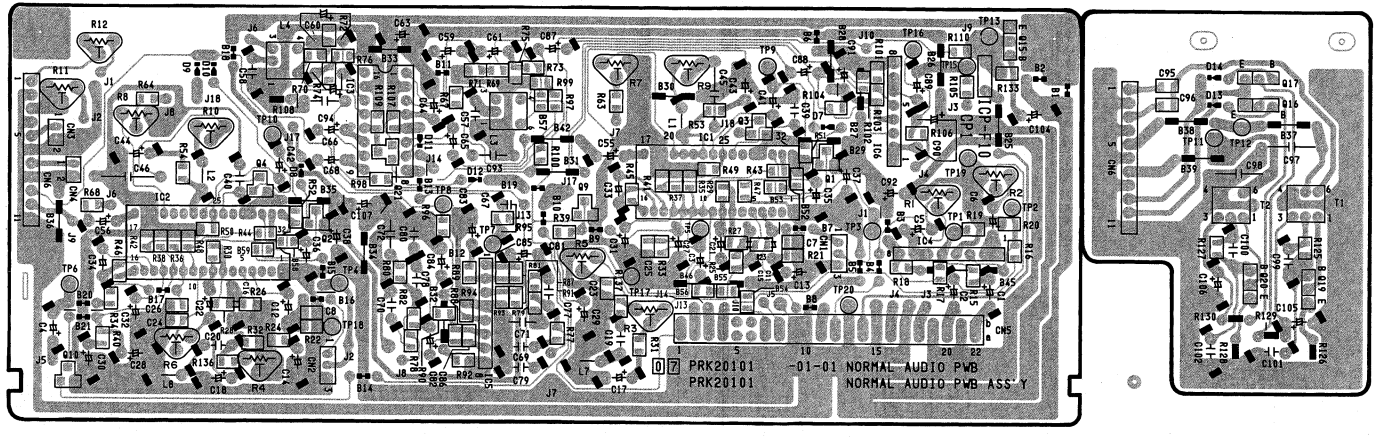
SYMBOL No.		REC	PB
TRANSISTOR			
Q1	B	11.5	0.6
	C	0.3	11.5
	E	11.5	11.5
Q2	B	11.5	0.6
	C	0.3	11.5
	E	11.5	11.5
Q3	B	1.3	11.5
	C	11.5	0.0
	E	11.5	11.5
Q4	B	1.3	11.5
	C	11.5	0.0
	E	11.5	11.5
Q9	B	0.1	0.1
	C	0.0	0.0
	E	0.0	0.0
Q10	B	0.0	0.0
	C	0.0	0.0
	E	0.0	0.0
Q15	B	12.2	12.2
	C	12.3	12.5
	E	11.5	11.5
Q16	B	1.3	12.3
	C	12.2	0.3
	E	12.3	12.4
Q17	B	1.3	12.3
	C	12.2	0.3
	E	12.3	12.4
Q19	B	0.5	0.3
	C	11.0	0.3
	E	0.1	0.0
Q20	B	−1.2	0.3
	C	11.0	0.3
	E	0.2	0.0
CONNECTOR			
CN1	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
CN2	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
CN3	1	0.0	0.0
	2	0.0	0.0
CN4	1	0.0	0.0
	2	0.0	0.0
CN5	1A	11.2	0.1
	1B	11.2	0.1
	2A	0.8	12.1
	2B	0.8	12.1
	3A	11.1	11.2
	3B	11.1	11.2
	4A	0.1	0.1
	4B	0.1	0.1
	5A	0.0	0.0
	5B	0.0	0.0
	6A	0.0	4.7
	6B	0.0	4.7
	7A	0.0	0.0
	7B	0.0	0.0

SYMBOL No.		REC	PB
CN5	8A	0.0	0.0
	8B	0.0	0.0
	9A	0.0	0.0
	9B	0.0	0.0
	10A	0.0	0.0
	10B	0.0	0.0
	11A	0.0	0.0
	11B	0.0	0.0
	12A	0.0	0.0
	12B	0.0	0.0
	13A	0.0	0.0
	13B	0.0	0.0
	14A	12.4	12.4
	14B	12.4	12.4
	15A	0.0	0.0
	15B	0.0	0.0
	16A	5.4	5.3
	16B	5.3	5.3
	17A	0.0	0.0
	17B	0.0	0.0
	18A	5.3	5.4
	18B	5.3	5.4
	19A	0.0	0.0
	19B	0.0	0.0
	20A	0.0	0.0
	20B	0.0	0.0
	21A	0.0	0.0
	21B	0.0	0.0
	22A	0.0	0.0
	22B	0.0	0.0
CN6	1	0.0	0.0
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	0.0	0.0
	9	0.8	12.1
	10	12.3	12.4
	11	0.0	0.0



4.29 NORMAL AUDIO CIRCUIT BOARD

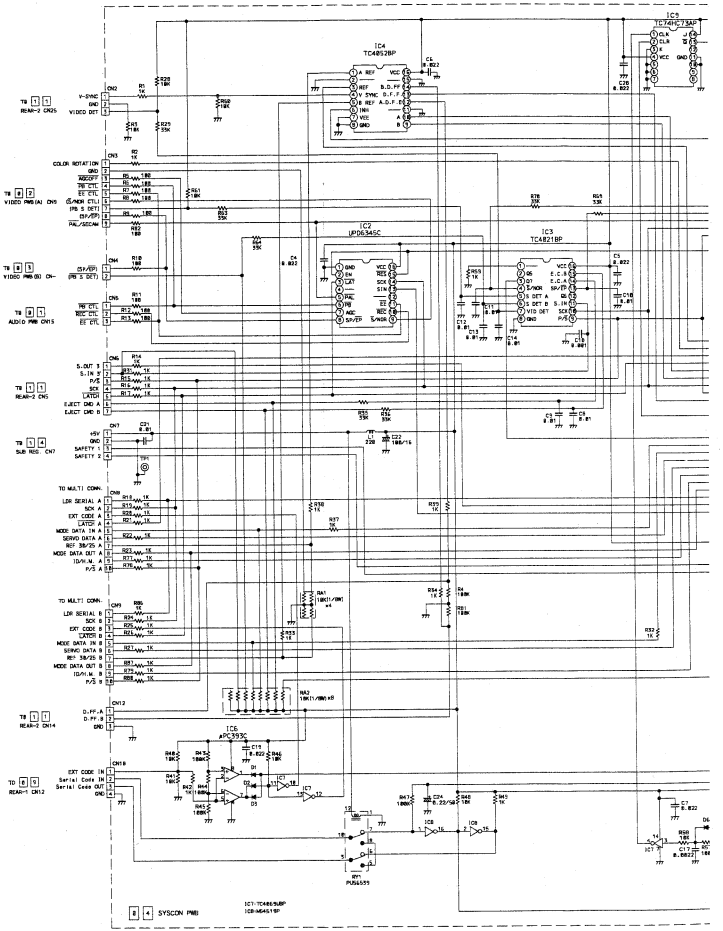
D.	REC	PB
8A	0.0	0.0
8B	0.0	0.0
9A	0.0	0.0
9B	0.0	0.0
10A	0.0	0.0
10B	0.0	0.0
11A	0.0	0.0
11B	0.0	0.0
12A	0.0	0.0
12B	0.0	0.0
13A	0.0	0.0
13B	0.0	0.0
14A	12.4	12.4
14B	12.4	12.4
15A	0.0	0.0
15B	0.0	0.0
16A	5.4	5.3
16B	5.3	5.3
17A	0.0	0.0
17B	0.0	0.0
18A	5.3	5.4
18B	5.3	5.4
19A	0.0	0.0
19B	0.0	0.0
20A	0.0	0.0
20B	0.0	0.0
21A	0.0	0.0
21B	0.0	0.0
22A	0.0	0.0
22B	0.0	0.0
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.8	12.1
10	12.3	12.4
11	0.0	0.0



- DC voltage (1/1) - ([04] SYSCON)

SYMBOL No.	REC	PB	SYMBOL No.	REC	PB	SYMBOL No.	REC	PB	SYMBOL No.	REC	PB
INTEGRATED CIRCUIT			IC1 63	0.0	3.0	IC7 1	4.5	4.5	CN6 1	0.5	0.4
IC1 1	0.0	0.0	64	0.0	2.6	2	0.2	0.2	2	1.1	1.0
2	2.0	2.0	IC2 1	0.0	0.0	3	0.6	0.6	3	0.1	0.0
3	0.0	0.0	2	4.9	4.8	4	5.0	5.0	4	4.2	4.2
4	4.9	4.9	3	0.0	0.0	5	4.9	4.8	5	0.0	0.0
5	0.0	0.0	4	0.2	3.8	6	0.0	0.0	6	4.9	4.9
6	4.8	4.8	5	0.0	0.0	7	0.0	0.0	7	4.9	4.9
7	4.9	4.9	6	11.9	0.0	8	4.7	0.9	CN7 1	5.0	5.0
8	4.9	4.9	7	0.0	0.0	9	0.0	4.0	2	0.0	0.0
9	0.0	0.0	8	0.0	0.0	10	0.0	0.0	3	0.0	0.0
10	0.0	0.0	9	0.0	0.0	11	4.9	4.9	4	0.0	0.0
11	0.0	0.0	10	0.0	0.0	12	0.0	0.0	CN8 1	0.0	3.7
12	0.0	0.0	11	0.0	11.9	13	5.0	5.0	2	0.0	4.2
13	0.0	0.0	12	0.0	0.0	14	5.0	5.0	3	0.0	0.0
14	0.0	0.0	13	0.1	0.1	IC8 1	0.0	0.0	4	0.0	0.0
15	2.5	2.5	14	4.2	4.2	2	3.8	3.8	5	4.9	4.9
16	0.8	0.8	15	4.8	4.8	3	4.6	4.6	6	0.5	0.5
17	4.4	4.4	16	4.9	4.9	4	0.6	0.6	7	0.0	0.0
18	4.9	4.9	IC3 1	0.0	0.0	5	3.8	0.0	8	0.4	0.4
19	0.0	0.0	2	0.9	0.9	6	0.7	0.7	9	0.0	0.0
20	1.2	1.6	3	1.0	1.0	7	0.2	0.2	10	0.1	0.1
21	0.0	0.8	4	4.9	4.9	8	0.0	0.0	CN9 1	3.8	3.7
22	0.0	0.9	5	4.9	4.9	9	0.0	0.0	2	4.2	4.2
23	4.9	4.9	6	4.9	4.9	10	3.8	3.8	3	0.0	0.0
24	0.1	0.8	7	0.0	0.0	11	0.7	0.6	4	0.0	0.0
25	4.9	0.1	8	0.0	0.0	12	0.6	0.6	5	0.6	0.7
26	4.9	0.1	9	0.1	0.1	13	3.8	3.7	6	0.4	0.4
27	0.0	0.0	10	4.2	4.2	14	0.6	0.6	7	2.1	2.1
28	0.0	0.3	11	1.1	1.0	15	0.7	0.7	8	0.4	0.4
29	0.0	0.3	12	1.0	P	16	3.8	3.8	9	0.3	0.3
30	0.0	3.8	13	4.9	4.9	IC9 1	5.0	4.9	10	0.1	0.1
31	0.0	0.4	14	4.9	4.9	2	0.0	4.9	CN10 1	2.5	2.5
32	0.0	0.1	15	4.9	4.9	3	0.0	0.0	2	0.0	0.0
33	4.9	4.9	16	4.9	4.9	4	5.0	4.9	3	0.0	0.7
34	0.0	4.0	IC4 1	0.0	0.0	5	0.0	0.0	4	0.0	0.0
35	0.0	4.0	2	0.0	0.0	6	0.0	0.0	CN11 1	0.5	0.4
36	0.0	4.0	3	0.0	2.1	7	0.0	0.0	2	0.2	0.1
37	0.0	3.1	4	4.0	4.0	8	5.0	4.9	3	0.5	0.5
38	0.0	1.6	5	2.1	2.1	9	0.0	0.0	4	0.0	0.0
39	0.0	3.3	6	0.0	0.0	10	0.0	0.0	5	0.1	0.1
40	0.0	1.7	7	0.0	0.0	11	0.0	0.0	6	4.2	4.2
41	0.0	2.7	8	0.0	0.0	12	0.0	0.0	7	0.0	0.0
42	0.0	0.0	9	0.0	0.1	13	5.0	4.9	8	3.8	3.8
43	0.0	2.7	10	0.0	4.9	14	5.0	4.9	9	4.6	4.5
44	0.0	2.6	11	0.0	0.0	**CONNECTOR**			CN12 1	4.4	4.4
45	0.0	2.7	12	4.4	0.0	CN2 1	4.5	4.4	2	2.1	2.2
46	0.0	2.8	13	4.4	2.2	2	0.0	0.0	3	0.0	0.0
47	0.0	2.9	14	2.1	2.2	3	0.0	0.0			
48	0.0	2.8	15	0.0	0.0	CN3 1	2.4	2.1			
49	0.0	2.9	16	5.0	4.9	2	0.0	0.0			
50	0.0	2.9	IC5 1	4.9	4.9	3	0.1	0.1			
51	0.0	1.1	2	P	P	4	12.0	0.1			
52	0.0	1.5	3	O.O	O.O	5	0.0	11.9			
53	0.0	1.5	4	1.3	1.3	6	0.0	0.0			
54	0.0	1.3	5	4.8	4.8	7	4.9	4.9			
55	0.0	1.2	IC6 1	0.0	0.0	8	0.0	0.0			
56	0.0	1.8	2	2.5	2.5	9	0.0	0.0			
57	0.0	2.6	3	3.3	3.3	CN4 1	0.0	0.0			
58	0.0	2.6	4	0.0	0.0	2	4.9	4.9			
59	0.0	0.0	5	2.5	2.5	CN5 1	12.0	0.2			
60	0.0	4.1	6	1.7	1.7	2	0.0	0.0			
61	0.0	4.6	7	4.7	4.7	3	0.1	12.0			
62	0.0	4.7	8	5.0	5.0						

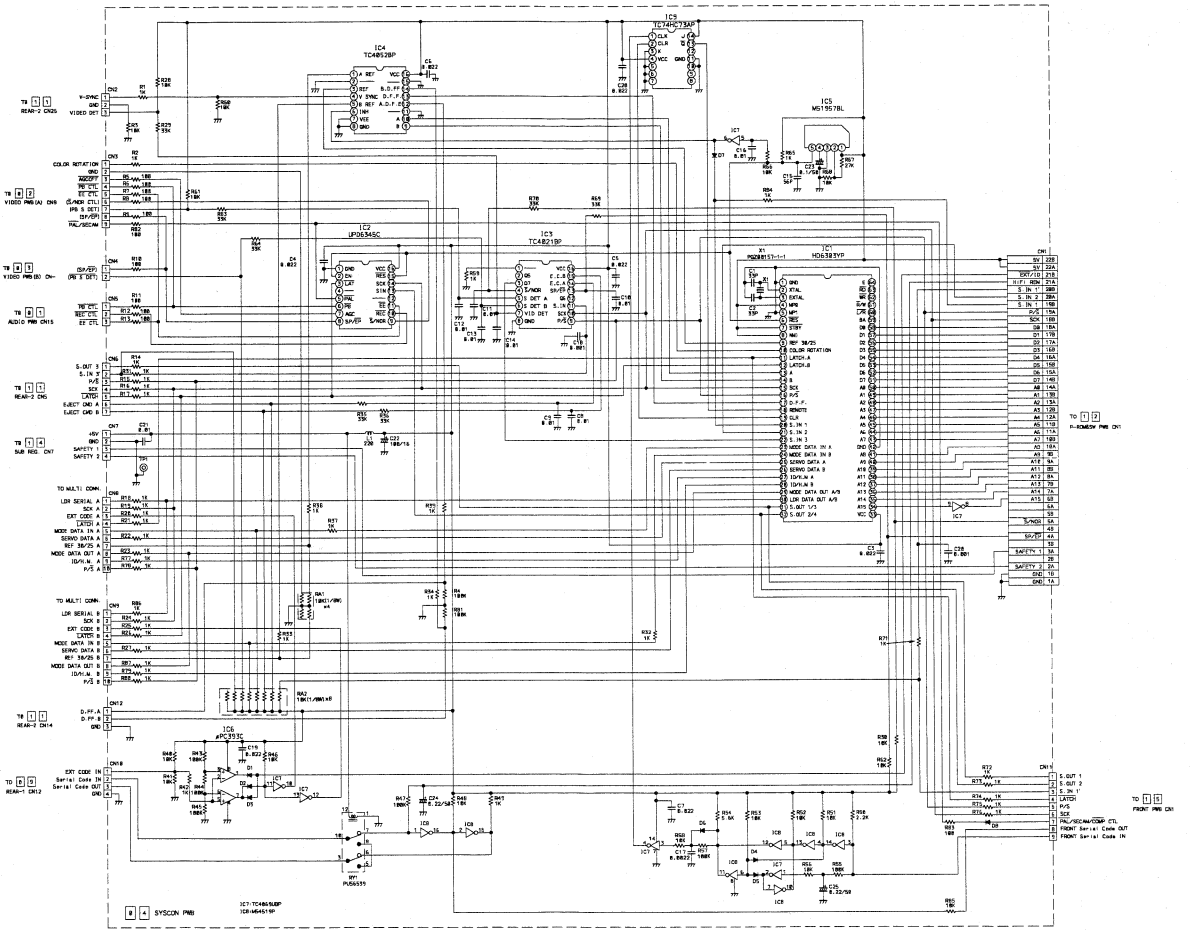
4.30 SYSCON SCHEMATIC DIAGRAM



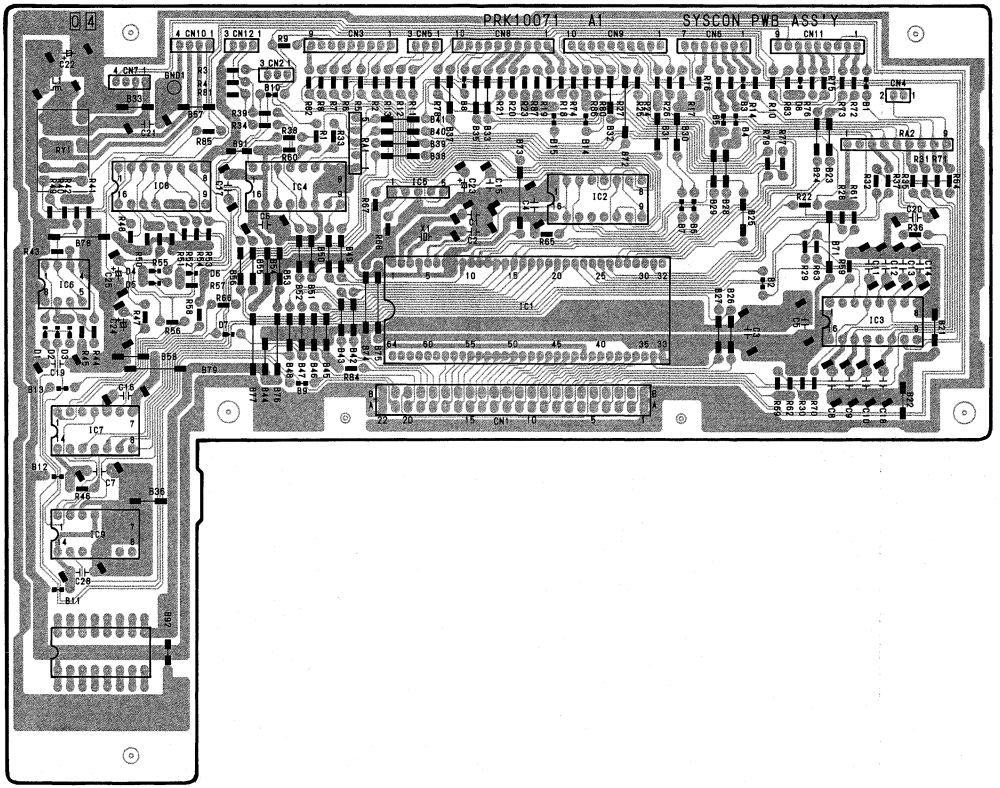
4-42

4.30 SYSCON SCHEMATIC DIAGRAM

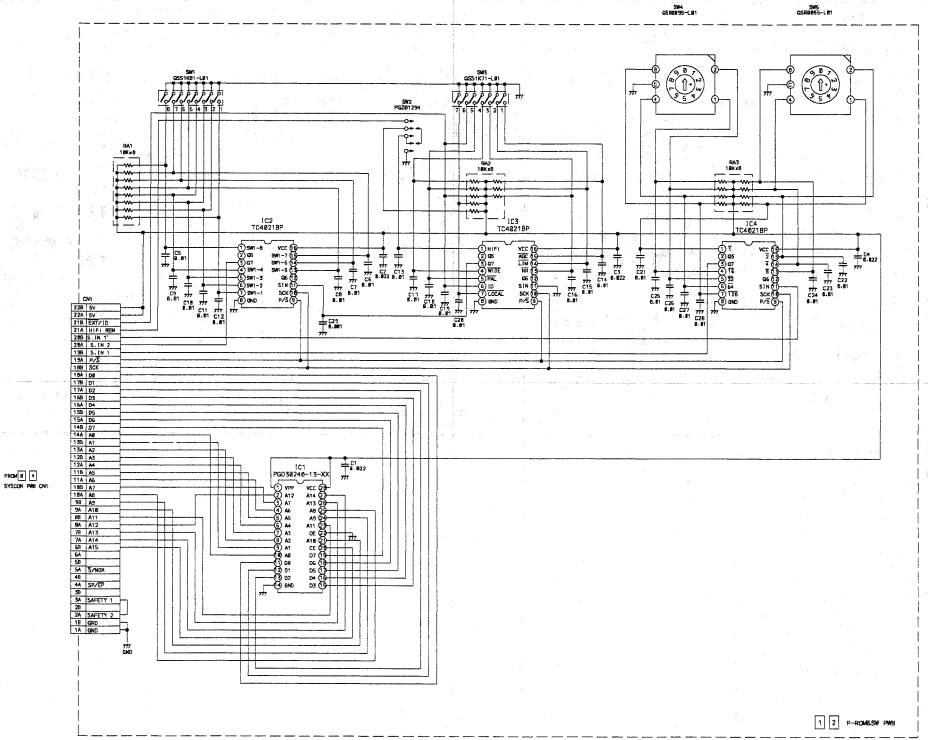
PB
0.4
1.0
0.0
4.2
0.0
4.9
4.9
5.0
0.0
0.0
0.0
3.7
4.2
0.0
0.0
4.9
0.5
0.0
0.4
0.0
0.1
3.7
4.2
0.0
0.0
0.7
0.4
2.1
0.4
0.3
0.1
2.5
0.0
0.7
0.0
0.4
0.1
0.5
0.0
0.1
4.2
0.0
3.8
4.5
4.4
2.2
0.0



4-42


PRK10071 A1
SYSCON PWB ASS'Y

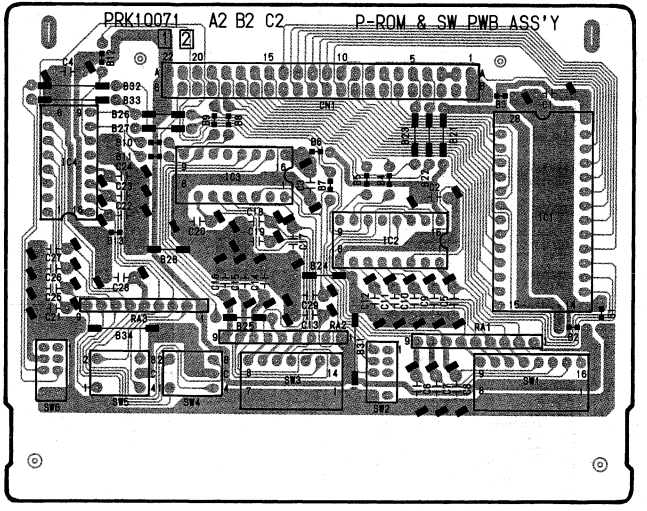
4.32 P-ROM & SWITCH SCHEMATIC DIAGRAM



4-44

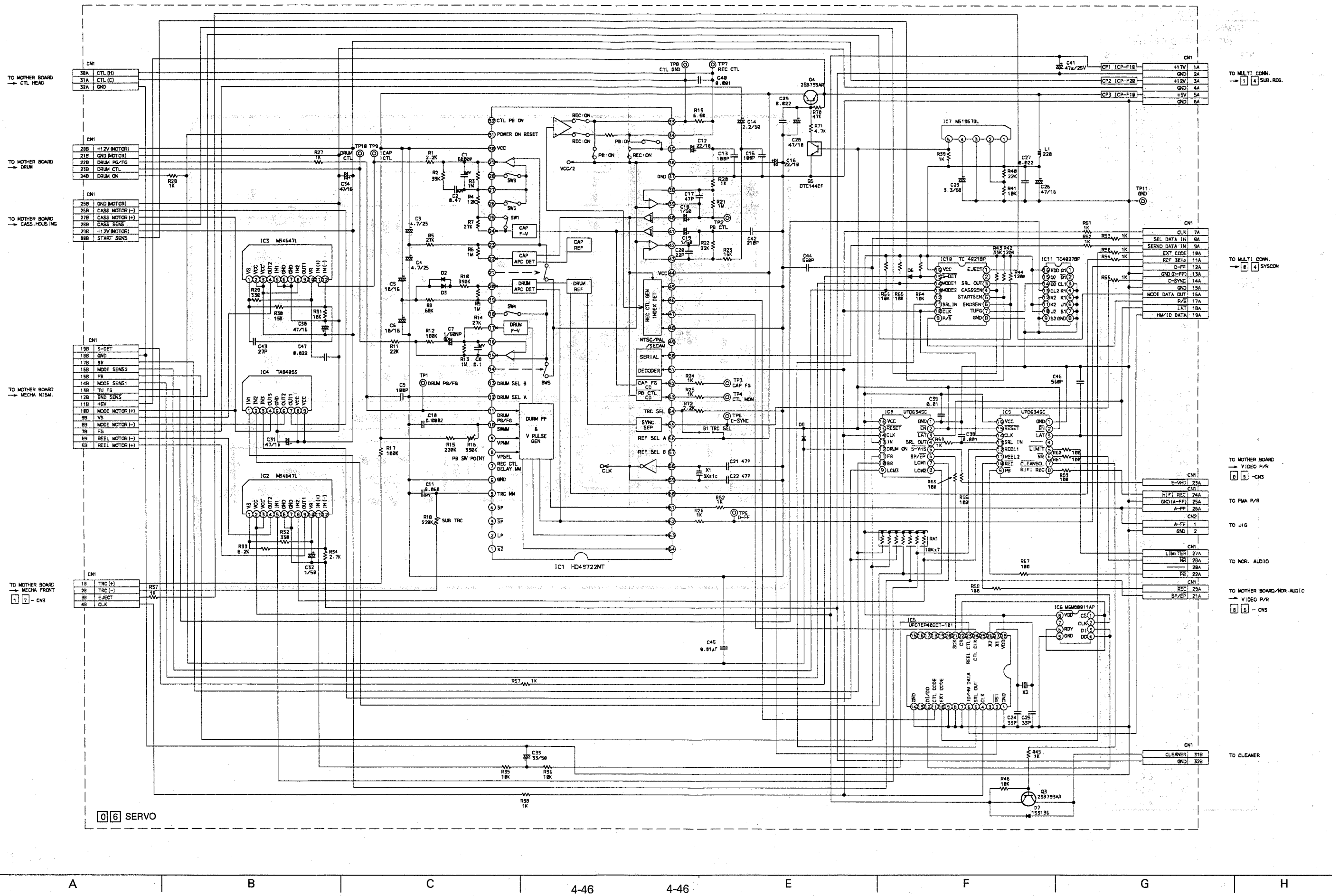
– DC voltage (1/1)

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC2	1	4.9	4.9
	2	0.7	0.7
	3	0.9	0.8
	4	4.9	4.9
	5	0.0	4.9
	6	4.9	4.9
	7	4.9	4.9
	8	0.0	0.0
	9	0.1	0.1
	10	4.2	4.2
	11	0.4	0.4
	12	0.8	0.8
	13	4.9	4.9
	14	0.0	0.0
	15	4.9	4.9
	16	4.9	4.9
CONNECTOR			
CN1	1A	0.0	0.0
	1 B	0.0	0.0
	2A	0.0	0.0
	3A	0.0	0.0
	4A	4.9	4.9
	5A	4.9	4.9
	6 B	0.9	0.9
	7A	4.0	4.0
	7 B	4.0	4.0
	8A	3.1	3.2
	8 B	1.2	1.2
	9A	3.3	3.3
	9 B	1.7	1.7
	10A	2.7	0.0
	10 B	2.7	2.7
	11A	2.7	2.6
	11 B	2.8	2.8
	12A	2.8	2.8
	12 B	2.9	2.9
	13A	2.8	2.8
	13 B	2.9	2.9
	14A	2.9	2.9
	14 B	1.1	1.1
	15A	1.5	1.5
	15 B	1.5	1.5
	16A	1.4	1.3
	16 B	1.2	1.2
	17A	1.8	1.8
	17 B	2.8	2.8
	18A	2.7	2.7
	18 B	4.2	0.0
	19A	0.1	0.1
	19 B	1.7	1.7
	20A	0.9	0.9
	20 B	0.5	0.5
	21A	0.0	0.0
	21 B	0.0	0.0
	22A	4.9	4.9
	22 B	4.9	4.9



4-45

4.34 SERVO SCHEMATIC DIAGRAM

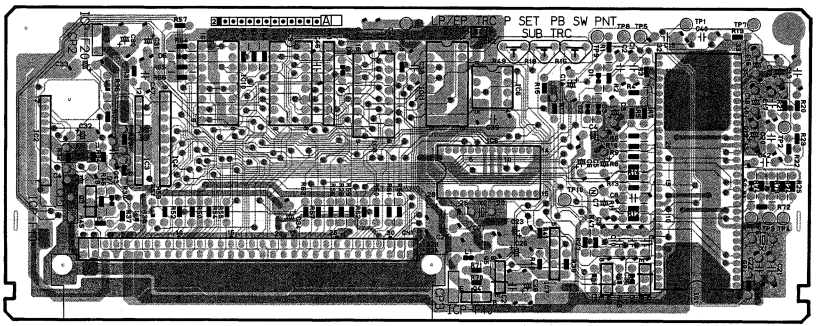


TO MOTHER BOARD → CTL HEAD
TO MOTHER BOARD → DRUM
TO MOTHER BOARD → CASS.HOUSING
TO MOTHER BOARD → MECHA NISM.
TO MOTHER BOARD → MECHA FRONT
1 7 - CN3
TO MULTI CONN. → 1 4 SUB.REG.
TO MULTI CONN. → 0 4 SYSCON
TO MOTHER BOARD → VIDEO P/R
0 5 -CN3
TO FMA P/R
TO JIG
TO NOR. AUDIO
TO MOTHER BOARD/NOR.AUDIO → VIDEO P/R
0 5 - CN3
TO CLEANER
IC1 HD49722NT
IC2 M54647L
IC3 M54647L
IC4 TA8405S
IC5 UPD75P402CT-101
IC6 MSM80011AP
IC7 M51957BL
IC8 UPD6345C
IC9 UPD6345C
IC10 TC 4021BP
IC11 TC4027BP
0 6 SERVO

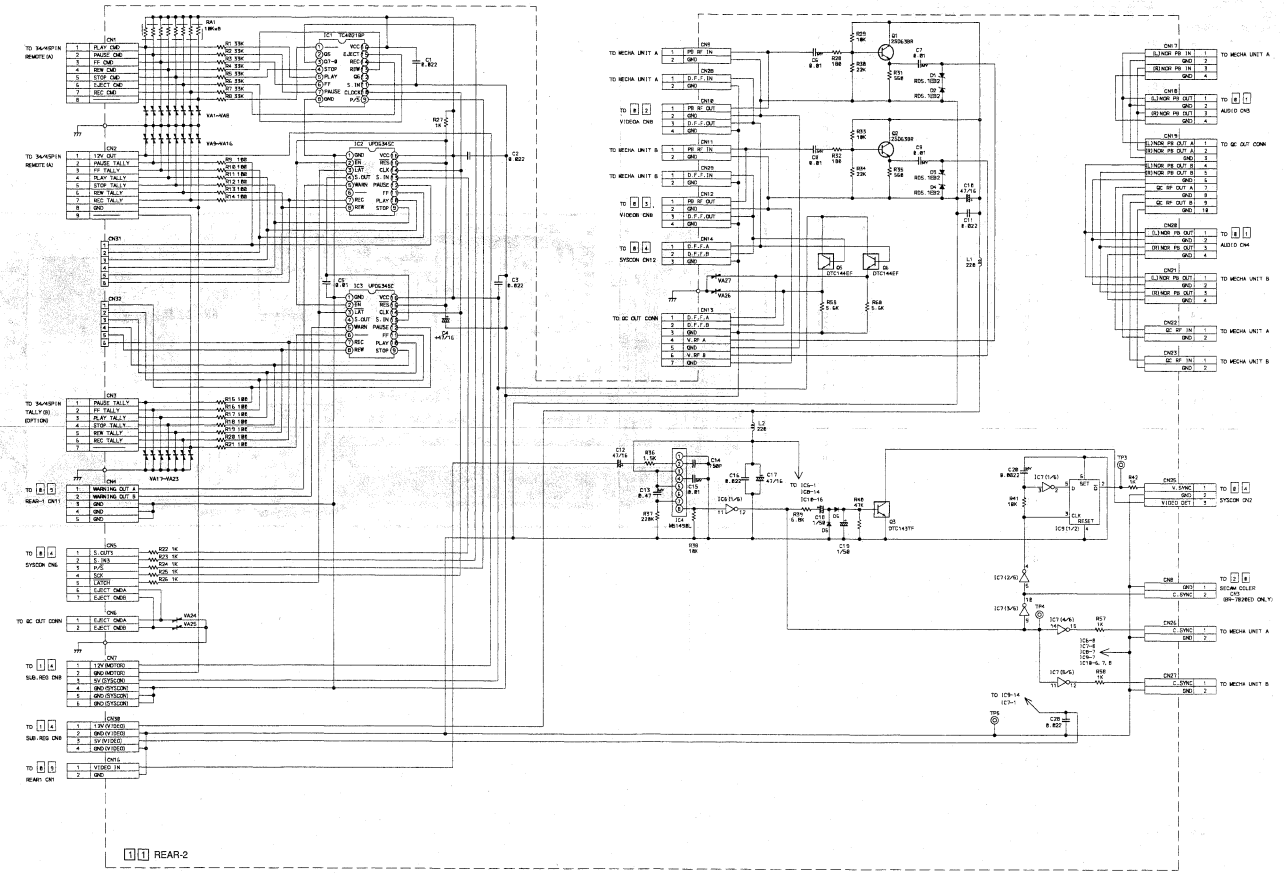
- DC voltage (1/1) - ([06] SERVO)

SYMBOL No.		REC	PB
INTEGRATED CIRCUIT			
IC1	1	4.9	4.9
	2	0.0	0.0
	3	0.0	0.0
	4	4.9	4.9
	5	0.7	0.7
	6	0.0	0.0
	7	0.1	0.0
	8	0.0	0.0
	9	0.0	0.0
	10	0.3	0.3
	11	1.4	1.4
	12	0.0	0.0
	13	2.5	2.5
	14	4.8	4.9
	15	2.7	2.6
	16	2.4	2.4
	17	2.4	2.4
	18	0.0	0.0
	19	2.4	2.4
	20	2.4	2.4
	21	2.5	2.5
	22	2.5	2.5
	23	2.5	2.5
	24	2.5	2.5
	25	2.5	2.5
	26	0.0	0.0
	27	2.4	2.4
	28	0.0	0.0
	29	1.4	1.4
	30	4.9	4.9
	31	3.5	3.5
	32	0.0	4.9
	33	2.1	2.4
	34	2.3	2.4
	35	2.4	2.4
	36	2.4	2.4
	37	0.0	0.0
	38	2.4	2.4
	39	2.4	2.4
	40	2.2	2.3
	41	2.2	2.2
	42	2.4	2.4
	43	2.4	2.4
	44	4.9	4.9
	45	0.0	0.0
	46	0.0	0.0
	47	0.2	0.1
	48	0.0	0.0
	49	4.9	4.9
	50	0.7	0.8
	51	4.1	4.1
	52	2.4	2.4
	53	4.9	4.9
	54	4.9	4.9
	55	0.4	0.4
	56	4.9	4.9
	57	0.0	0.0
	58	2.3	2.3
	59	2.3	2.3
	60	2.3	2.3
	61	0.0	2.4
	62	2.4	2.4
	63	4.5	4.5
	64	0.1	0.1
IC4	1	4.8	4.9
	2	4.8	4.9
	3	4.8	4.9
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	12.5	12.5
	9	12.5	12.5
IC6	1	0.0	0.0
	2	4.8	4.9
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	4.8	4.9
	8	4.8	4.9
IC7	1	4.8	4.9
	2	1.5	1.5
	3	0.0	0.0
	4	1.2	1.2
	5	4.6	4.6
IC8	1	0.0	0.0
	2	4.6	4.6
	3	0.0	0.0
	4	0.3	0.3
	5	0.0	0.0
	6	0.0	0.0
	7	4.8	4.9
	8	4.8	4.9
	9	4.8	4.8
	10	0.0	0.0
	11	0.0	0.0
	12	3.5	3.5
	13	0.4	0.4
	14	4.1	4.1
	15	4.6	4.6
	16	4.8	4.9
IC9	1	0.0	0.0
	2	4.6	4.6
	3	0.0	0.0
	4	0.4	0.4
	5	0.0	0.0
	6	0.0	0.0
	7	18.1	18.1
	8	0.0	0.0
	9	0.0	0.0
	10	0.0	11.5
	11	0.0	0.0
	12	3.3	3.3
	13	0.3	0.3
	14	4.1	4.1
	15	4.6	4.6
	16	4.8	4.9
IC10	1	5.0	5.0
	2	0.4	0.5
	3	0.6	0.7
	4	0.1	0.1
	5	4.4	4.7
	6	4.6	4.8
	7	0.0	4.9
	8	0.0	0.0
	9	0.0	0.0
	10	4.1	4.1
	11	0.1	0.2
	12	0.4	0.5
	13	4.8	4.8
	14	4.8	4.8
	15	0.5	4.8
	16	4.8	4.9
IC11	1	4.8	4.9
	2	0.0	0.0
	3	0.0	0.0
	4	0.0	0.0
	5	0.0	0.0
	6	0.0	0.0
	7	0.0	0.0
	8	0.0	0.0
	9	0.0	0.0
	10	4.8	4.9
	11	4.8	4.9
	12	0.0	0.0
	13	P	P
	14	0.0	4.9
	15	4.8	4.9
	16	4.8	4.9

[0 6] PRK20103 A■■■■ SERVO PWB ASS'Y
PRK20103 -01-02 SERVO PWB



4.36 REAR-2 SCHEMATIC DIAGRAM



4.37 REAR-2 CIRCUIT BOARD

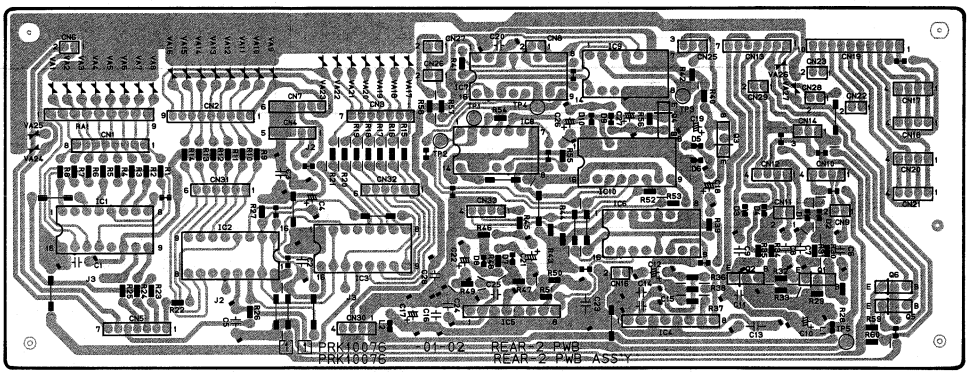
- DC voltage (1/1) - ([11] REAR 2)

SYMBOL No.	REC	PB
INTEGRATED CIRCUIT		
IC1		
1	5.0	5.0
2	0.4	0.4
3	0.7	0.7
4	5.0	5.0
5	5.0	5.0
6	5.0	5.0
7	5.0	5.0
8	0.0	0.0
9	0.1	0.1
10	4.1	4.0
11	0.0	0.0
12	0.5	0.5
13	5.0	5.0
14	5.0	5.0
15	5.0	5.0
16	5.0	5.0
IC2		
1	0.0	0.0
2	4.8	4.8
3	0.0	0.0
4	0.4	0.4
5	0.0	0.0
6	0.0	0.0
7	0.0	0.7
8	0.5	0.7
9	0.6	0.7
10	0.2	0.0
11	0.6	0.7
12	0.5	0.7
13	0.4	0.4
14	4.1	4.0
15	4.8	4.8
16	5.0	5.0
IC3		
1	0.0	0.0
2	4.8	4.8
3	0	0.0
4	0.4	0.3
5	0.0	0.0
6	0.0	0.0
7	0.2	0.4
8	0.0	0.7
9	0.2	0.7
10	0.0	0.0
11	0.4	0.4
12	4.1	4.0
13	4.8	4.8
14	5.0	5.0
15	0.0	0.0
16	0.0	0.0
IC4		
1	0.0	0.0
2	6.2	6.2
3	11.5	11.6
4	8.7	8.7
5	11.6	11.6
6	4.4	4.5
7	6.4	6.4
8	1.9	1.3
IC5		
1	11.6	11.6
2	11.6	11.6
3	0.0	0.0
4	11.6	11.6

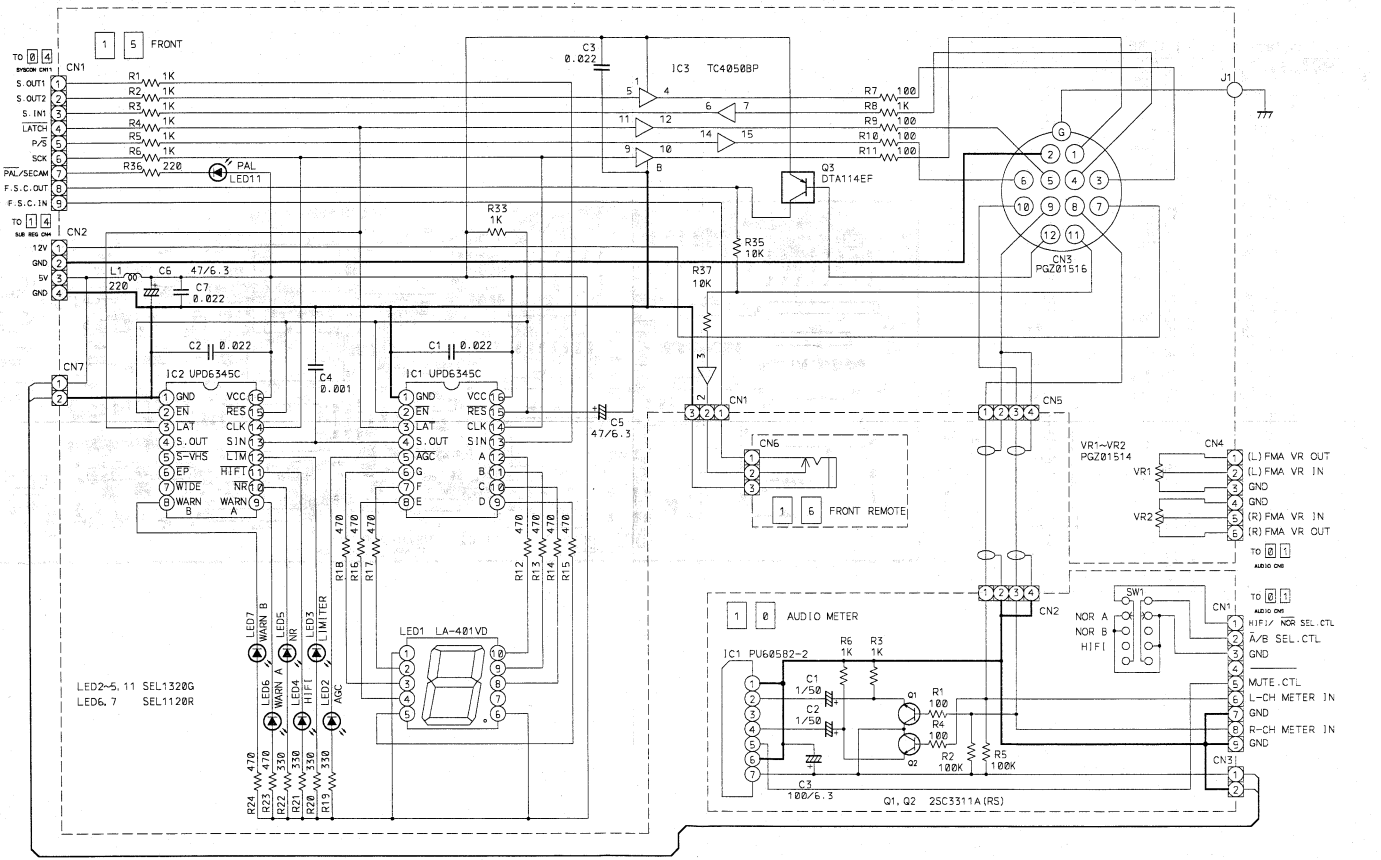
SYMBOL No.	REC	PB
IC6		
5	0.0	0.0
6	11.6	11.6
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	11.6	11.6
11	1.3	1.3
12	10.5	10.6
13	0.0	0.0
14	0.0	0.0
15	11.5	11.6
16	0.0	0.0
IC7		
1	5.1	5.0
2	5.0	5.1
3	4.6	4.6
4	4.6	4.6
5	0.4	0.4
6	5.1	5.0
7	0.0	0.0
8	0.0	0.0
9	10.5	10.6
10	0.4	0.4
11	10.5	10.6
12	0.4	0.4
13	0.5	0.0
14	10.5	10.6
15	0.4	0.4
16	5.0	5.0
IC8		
1	0.1	0.1
2	4.8	4.8
3	4.6	4.6
4	0.0	0.0
5	0.1	0.1
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0
11	0.0	0.0
12	0.0	0.0
13	5.0	5.0
14	5.1	5.0
TRANSISTOR		
Q1 B	7.3	7.3
C	11.4	11.5
E	6.6	6.7
Q2 B	7.3	7.4
C	11.4	11.5
E	6.7	6.7
Q3 B	1.0	1.0
C	0.0	0.0
E	0.0	0.0
Q4 B	0.0	0.0
C	0.0	0.0
E	0.0	0.0
Q5 B	2.1	2.2
C	5.0	5.0
E	1.5	1.5
Q6 B	2.2	2.2
C	5.0	5.0
E	1.5	1.5

SYMBOL No.	REC	PB
CONNECTOR		
CN1 1	5.0	5.0
2	5.0	5.0
3	5.0	5.0
4	5.0	5.0
5	5.0	5.0
6	5.0	5.0
7	5.0	5.0
8	5.0	5.0
CN2 1	10.5	10.6
2	0.6	0.7
3	0.7	0.7
4	0.0	0.0
5	0.7	0.7
6	0.6	0.7
7	0.0	0.0
8	0.0	0.0
CN3 1	0.6	0.5
2	0.6	0.5
3	0.0	0.0
4	0.6	0.5
5	0.6	0.5
6	0.0	0.5
7	0.4	0.3
8	0.0	0.0
9	0.0	0.0
10	0.0	0.0
CN4 1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
CN5 1	0.4	0.4
2	0.1	0.1
3	0.0	0.0
4	4.1	4.1
5	0.0	0.0
6	4.9	4.9
7	4.9	4.9
CN6 1	4.9	4.9
2	4.9	4.9
CN7 1	12.5	12.6
2	0.0	0.0
3	5.0	5.0
4	0.0	0.0
5	0.0	0.0
CN8 1	0.0	0.0
2	0.0	0.0
CN10 1	0.0	0.0
2	0.0	0.0
3	2.2	2.2
4	0.0	0.0
CN11 1	0.0	0.0
2	0.0	0.0
CN12 1	0.0	0.0
2	0.0	0.0
3	2.1	2.2
4	0.0	0.0

SYMBOL No.	REC	PB
CN13 1	1.5	1.5
2	1.5	1.5
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.0	0.0
7	0.0	0.0
CN14 1	2.2	2.2
2	2.1	2.3
3	0.0	0.0
CN16 1	0.2	0.2
2	0.0	0.0
CN17 1	5.5	5.5
2	0.0	0.0
3	4.9	4.9
4	0.0	0.0
CN18 1	5.5	5.5
2	0.0	0.0
3	4.9	4.9
4	0.0	0.0
CN19 1	5.6	5.6
2	5.0	4.9
3	0.0	0.0
4	5.5	5.5
5	5.5	5.5
6	0.0	0.0
7	0.0	0.0
8	0.0	0.0
9	0.0	0.0
CN20 1	5.4	5.5
2	0.0	0.0
3	5.4	5.5
4	0.0	0.0
CN21 1	5.5	5.5
2	0.0	0.0
3	5.5	5.4
4	0.0	0.0
CN22 1	0.0	0.0
2	0.0	0.0
CN23 1	0.0	0.0
2	0.0	0.0
CN25 1	4.4	4.4
2	0.0	0.0
3	0.0	0.0
CN26 1	0.4	0.4
2	0.0	0.0
CN27 1	0.4	0.4
2	0.0	0.0
CN28 1	2.2	2.2
2	0.0	0.0
CN29 1	2.1	2.2
2	0.0	0.0
CN30 1	11.6	11.6
2	0.0	0.0
3	5.1	5.0
4	0.0	0.0

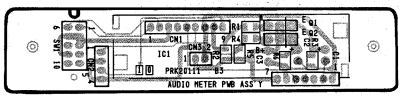


4.38 AUDIO METER, FRONT, FRONT REMOTE SCHEMATIC DIAGRAM

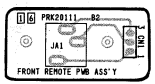


4.39 AUDIO METER, FRONT, FRONT REMOTE CIRCUIT BOARDS

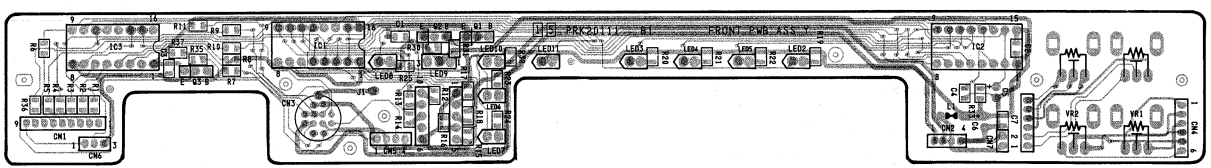
— AUDIO METER —



— FRONT REMOTE —

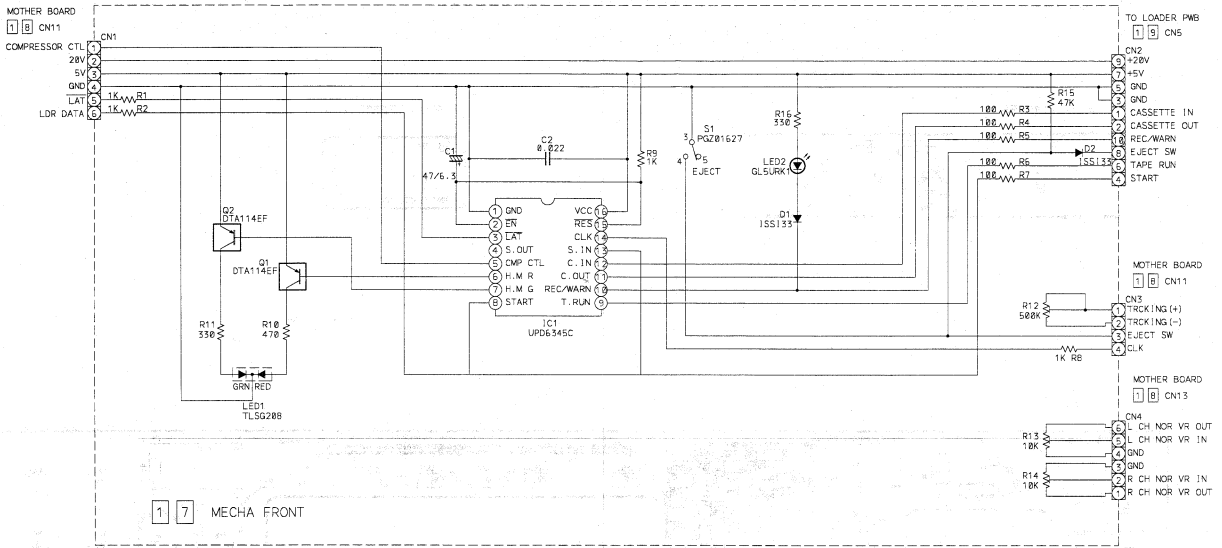


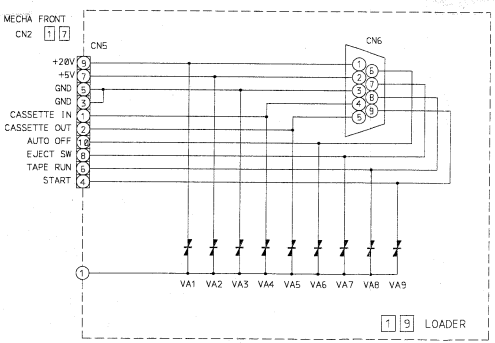
— FRONT —



4-51

4.40 MECHA FRONT & LOADER SCHEMATIC DIAGRAMS

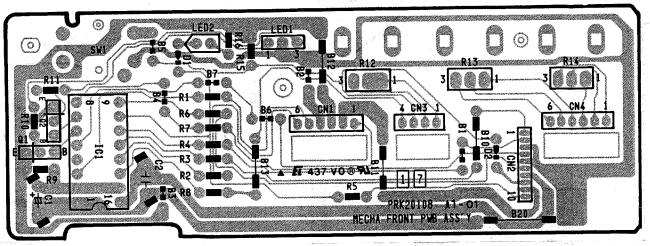




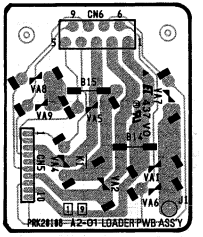
4-52

4.41 MECHA FRONT & LOADER CIRCUIT BOARDS

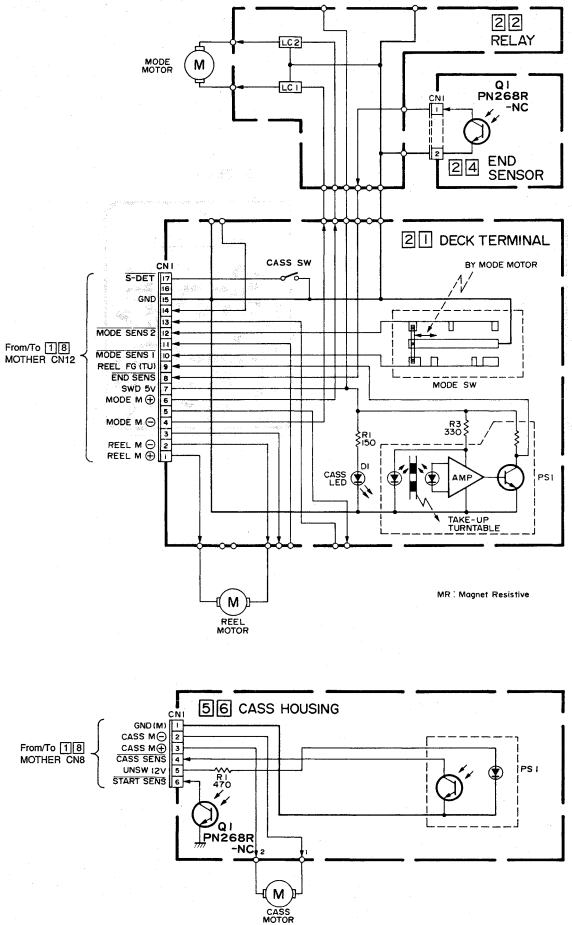
— MECHA FRONT —



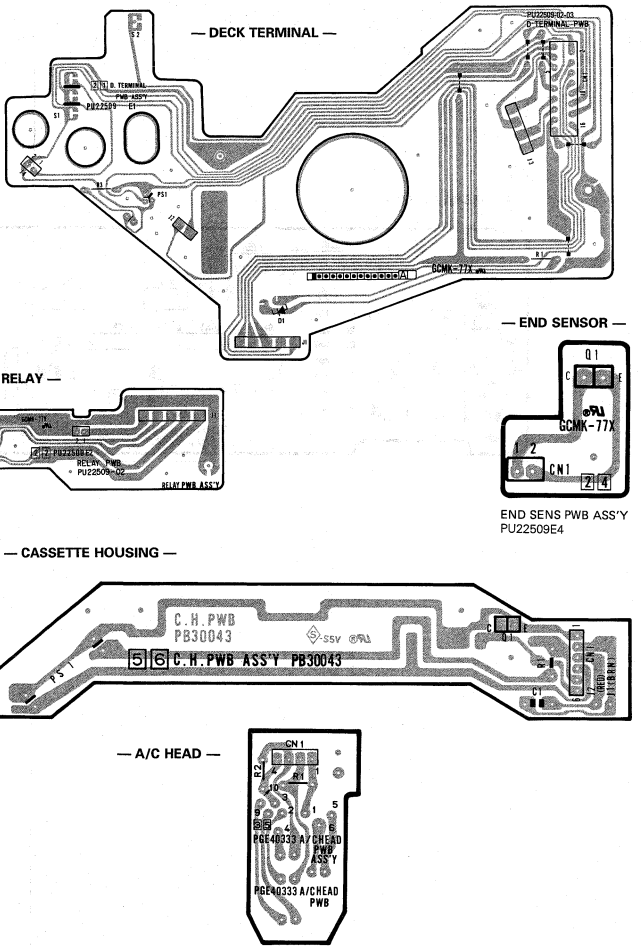
— LOADER —



4.42 DECK TERMINAL SCHEMATIC DIAGRAM



4.43 DECK TERMINAL CIRCUIT BOARD



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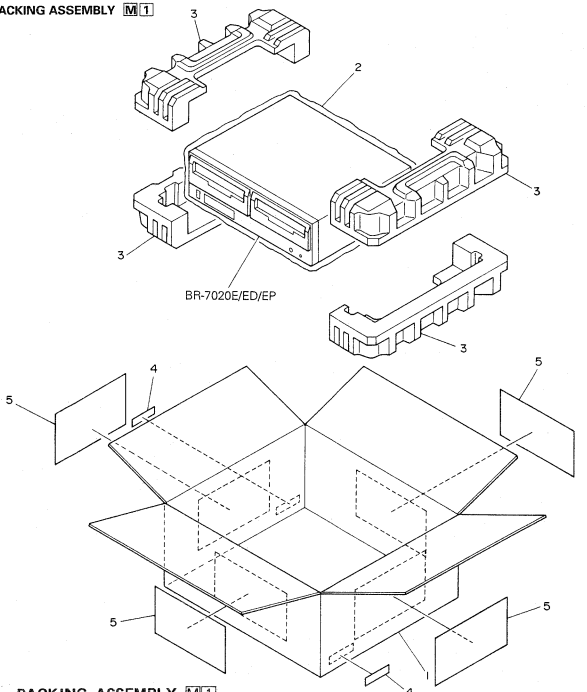
SECTION 5
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION
Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING ASSEMBLY M1

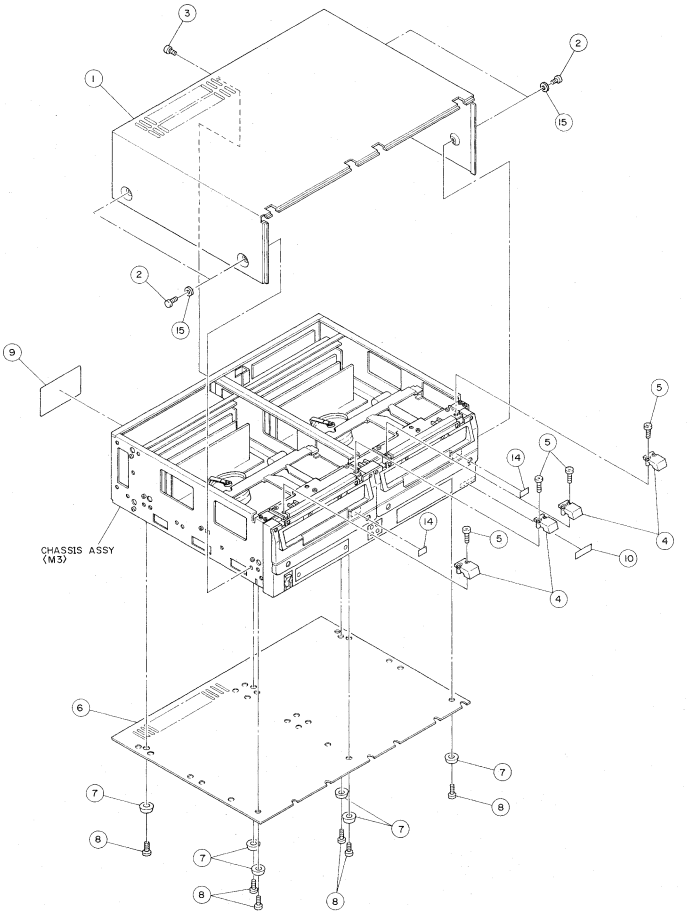


PACKING ASSEMBLY M1

M1MM□□□□

⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PRD20387-02-01	PACKING CASE
2	PGD30005-03	POLY BAG
3	PRD10260A-03	CUSHION ASSY
4	PUP40619	SERIAL NO.STICKER, ×2
5	PRD30329-41	PACKING LABEL, ×4

5.2 CABINET ASSEMBLY M2



CABINET ASSEMBLY M2

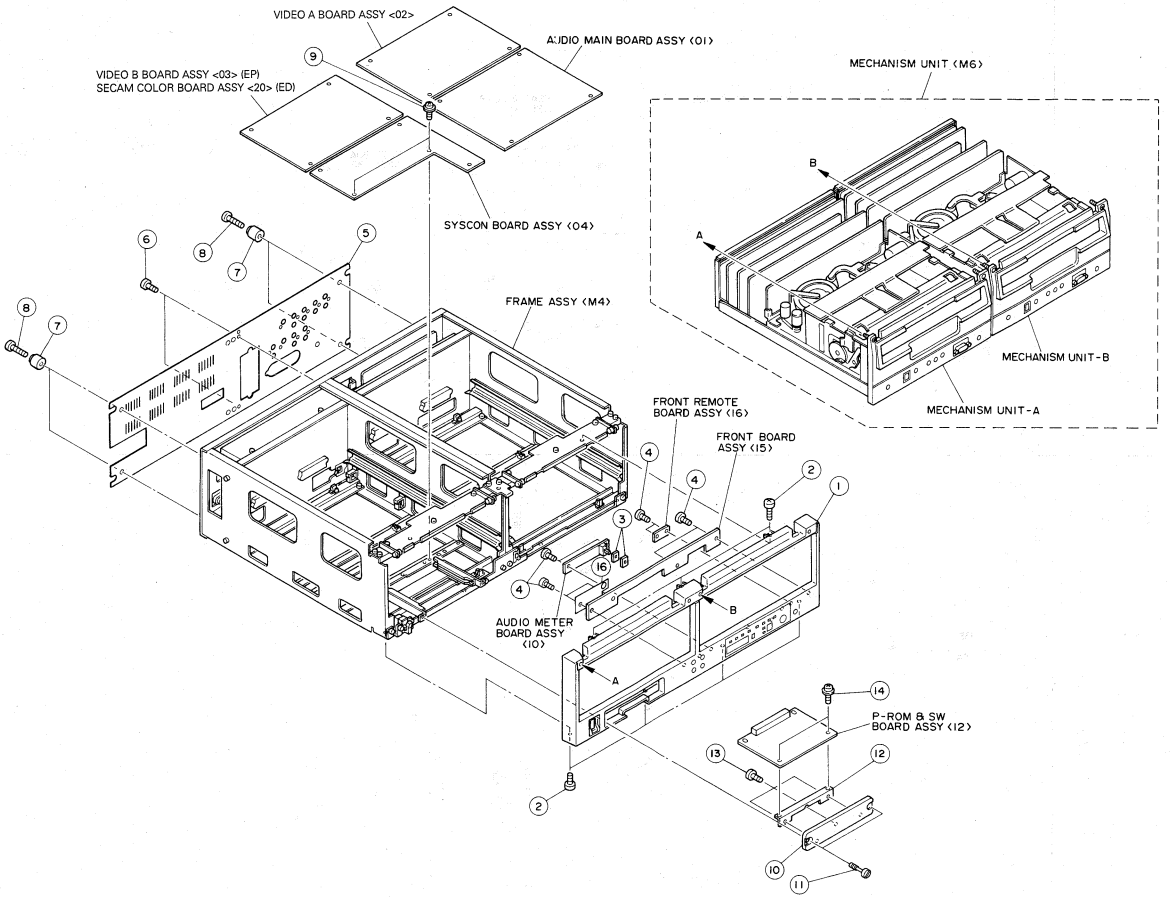
M2MM□□□□

△	REF No.	PART No.	PART NAME, DESCRIPTION
△	1	PRD10221	TOP COVER
	2	SDSP4006R	SCREW, ×4
	3	SDSP3006R	SCREW
	4	PRD30822	COVER(FOOK), ×4
	5	SDSP3010R	SCREW, ×4
△	6	PRD10223	BOTTOM COVER
	7	PGZ01647	FOOT, ×6
	8	SBST3008Z	SCREW, ×6
△	9	PRD30086-01-02	RATING LABEL, E
△		PRD30086-02-02	RATING LABEL, ED
△		PRD30086-03	RATING LABEL, EP
	10	PQ40111-1-5	SERIAL NO.PLATE
	14	PU49729-2	LABEL, ×2
	15	WBS4000N	WASHER, ×4

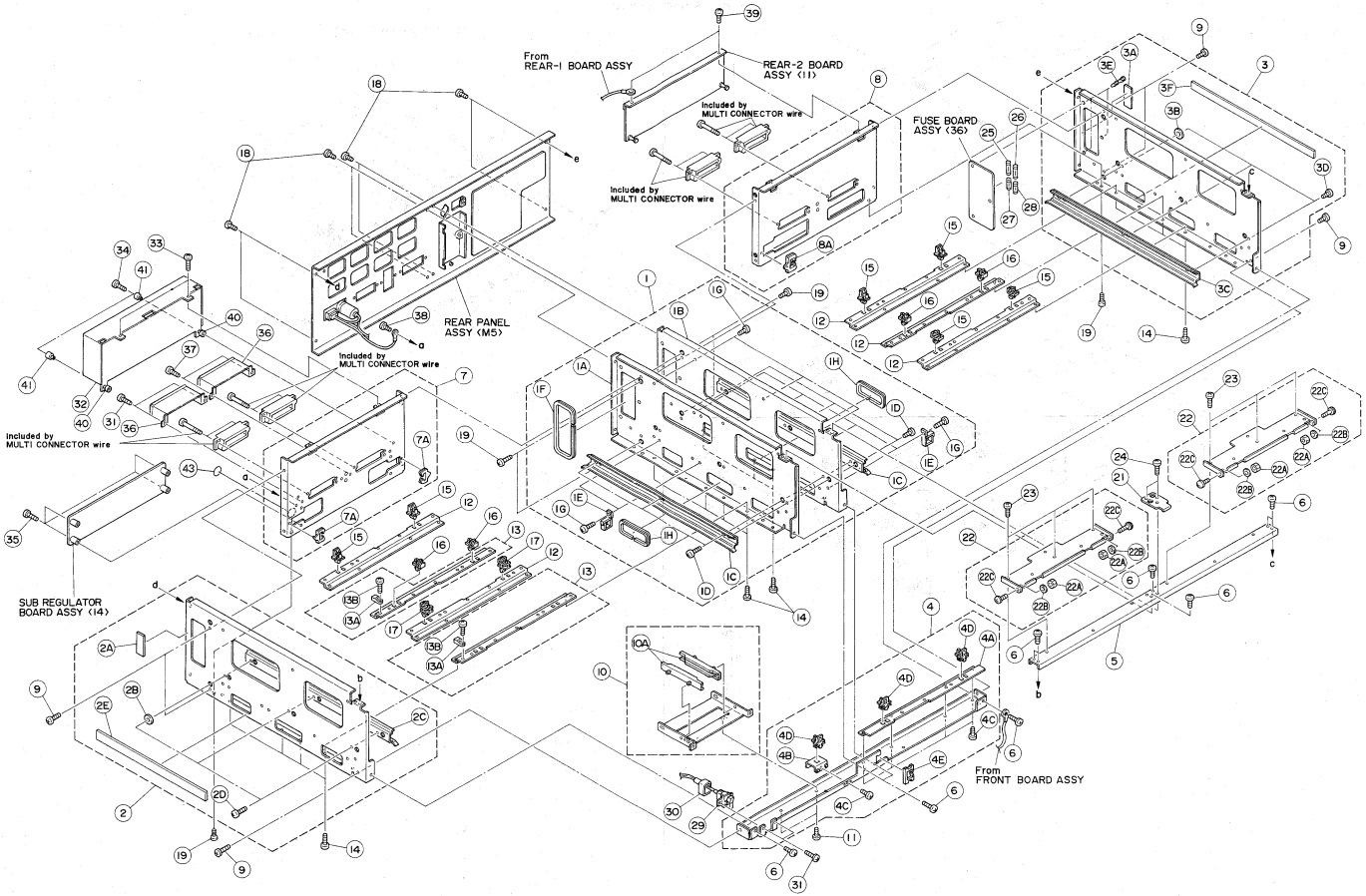
CHASSIS ASSEMBLY M3

M3MM□□□□

⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PRD10257C-02	FRONT PANEL ASSY
2	SDSP3006Z	SCREW, ×7
3	PRD43805	SPACER, ×2
4	SDSF2608Z	SCREW, ×8
⚠ 5	PRD20391-05	REAR COVER, E/ED
⚠	PRD20391-07	REAR COVER, EP
6	SDSP3006M	SCREW, ×2
7	QZF2319-001	FOOT, ×4
8	SPSP4018Z	SCREW, ×4
9	SBST3016Z	SCREW, ×2
10	PRD20353-02-04	SYSCON COVER, E
	PRD20353-03-04	SYSCON COVER, ED
	PRD20353-05	SYSCON COVER, EP
11	PRD43457-02	SPECIAL SCREW, ×2
12	PRD30723-01-01	SYSCON BOARD HOLDER
13	SDSF2606Z	SCREW, ×3
14	GBST3006Z	SCREW, ×2
16	PRD43958	INSULATOR


VIDEO A BOARD ASSY <02>
AUDIO MAIN BOARD ASSY (01)
VIDEO B BOARD ASSY <03> (EP)
SECAM COLOR BOARD ASSY <20> (ED)
SYSCON BOARD ASSY (04)
MECHANISM UNIT (M6)
MECHANISM UNIT-B
MECHANISM UNIT-A
FRAME ASSY (M4)
FRONT REMOTE BOARD ASSY (16)
FRONT BOARD ASSY (15)
AUDIO METER BOARD ASSY (10)
P-ROM & SW BOARD ASSY (12)

5.4 FRAME ASSEMBLY M4


From REAR-1 BOARD ASSY
REAR-2 BOARD ASSY (11)
Included by MULTI CONNECTOR wire
Included by MULTI CONNECTOR wire
FUSE BOARD ASSY (36)
REAR PANEL ASSY (M5)
Included by MULTI CONNECTOR wire
Included by MULTI CONNECTOR wire
SUB REGULATOR BOARD ASSY (14)
From FRONT BOARD ASSY

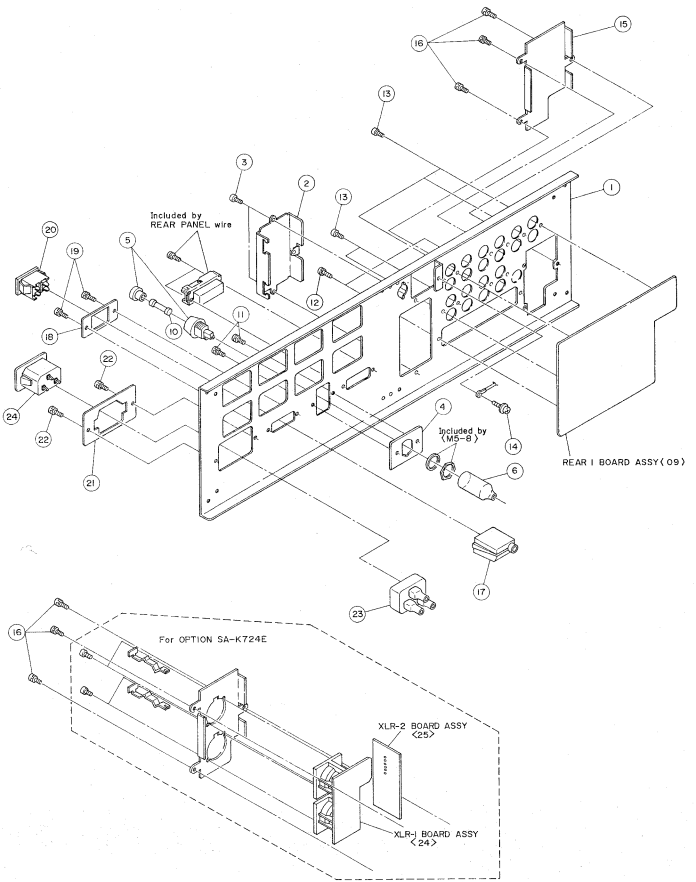
5-6

FRAME ASSEMBLY M4

M4MM□□□□

⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
1	PRD10262A-02	FRAME ASSY	
1A	PRD10215-01-02	FRAME(L)	
1B	PRD10214-01-02	FRAME(R)	
1C	PRD30800	RAIL(L), ×2	
1D	SPSP3004Z	SCREW, ×6	
1E	PU49472	WIRE CLAMP, ×6	
1F	PU43172-2-190	NYLON GROMMET	
1G	SBST3008Z	SCREW, ×9	
1H	PU43172-2-126	NYLON GROMMET, ×2	
2	PRD10263A-04	FRAME(L) ASSY	
2A	PRD30030-73	PAD, ×2	
2B	PRD30084-02	WASHER	
2C	PRD30801	RAIL(R)	
2D	SSSP2006Z	SCREW, ×3	
2E	PRD30030-92-08	PAD	
3	PRD10264A-04	FRAME(R) ASSY	
3A	PRD30030-73	PAD	
3B	PRD30084-02	WASHER	
3C	PRD30801	RAIL(R)	
3D	SSSP2006Z	SCREW, ×3	
3E	PGZ01665	LOCKING SPACER, ×3	
3F	PRD30030-92-08	PAD	
4	PRD10265A-02	FRONT LOWER FRAME ASSY	
4A	PRD30699-01-02	BOARD FRAME	
4B	PRD43665-01-01	BOARD BRACKET	
4C	SBST3006Z	SCREW, ×5	
4D	PGZ00605-03	BOARD SPACER, ×3	
4E	PU48086	EDGE SADDLE	
5	PRD20340	FRONT BRACKET	
6	SBST3006Z	SCREW, ×10	
7	PRD20399A-01	REAR FRAME(L) ASSY	
7A	PEM50784	WIRE HOLDER, ×2	
8	PRD20400A-01	REAR FRAME(R) ASSY	
8A	PGZ01664	EDGE SADDLE	
9	SSST3006Z	SCREW, ×6	
10	PRD30780A-01	SYSCON BRACKET ASSY	
10A	PGZ00493	GUIDE RAIL, ×2	
11	SBST3006Z	SCREW, ×2	
12	PRD30699-01-02	BOARD FRAME, ×5	
13	PRD30826A-01	BOARD FRAME ASSY, ×2	
13A	PU43981	HOLDER, ×2	
13B	SBST3006Z	SCREW, ×2	
14	SBST3006Z	SCREW, ×14	
15	PGZ00605-03	BOARD SPACER, ×6	
16	PGZ00606-03	BOARD HOLDER, ×4	
17	PGZ00606-04	BOARD HOLDER, ×2	
18	SBST3006Z	SCREW, ×8	
19	SBST3006Z	SCREW, ×8	
21	PRD43668	BRACKET(PANEL)	
22	PRD30818A-02	LOADER BRACKET ASSY, ×2	
22A	NNS4000N	NUT, ×4	
22B	WAS4000N	WASHER, ×4	
22C	PRD43475	HOLDER, ×4	
23	SDSP3006Z	SCREW, ×6	
24	SBST3006Z	SCREW, ×2	
⚠ 25	QMF51E2-1R6	FUSE, F01	T1.6A
⚠ 26	QMF51E2-1R0	FUSE, F02	T1.0A
⚠ 27	QMF51E2-1R0	FUSE, F03	T1.0A
⚠ 28	QMF51E2-1R0	FUSE, F04	T1.0A
⚠ 29	QSE2A11-L01	POWER SW	
⚠ 30	PRD42023	SW COVER	
31	SDSP3006Z	SCREW, ×2	
⚠ 32	PGZ01695-01-01	SWITCHING REGULATOR	
33	SBST3006Z	SCREW, ×2	
34	SBST3016Z	SCREW, ×2	
35	SBST3016Z	SCREW, ×4	
36	PRD43722-01-01	SHIELD PLATE, ×2	
37	SBST3006Z	SCREW, ×4	
38	DPSP4008N	SCREW	
39	SBST3006Z	SCREW, ×2	
40	PGZ01649	ONE TOUCH COLLAR, ×2(EP)	
41	PGZ01650	SPACER BUSH, ×2(EP)	
⚠ 43	PRD44090	STICKER	

5.5 REAR PANEL ASSEMBLY M 5

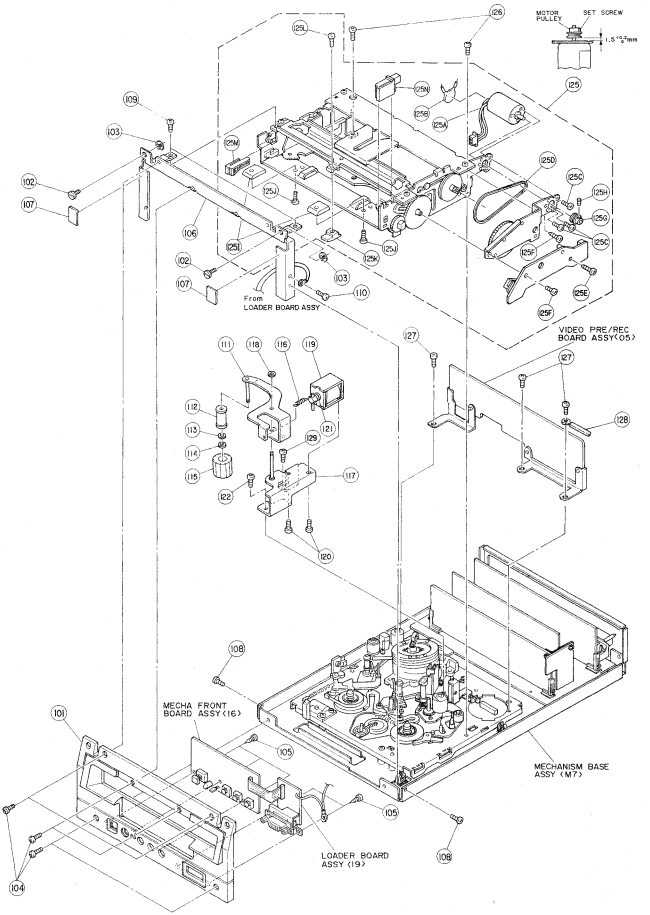


REAR PANEL ASSEMBLY M5

M5MM

⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
1	PRD10255-01-04	REAR PANEL	
2	PRD30711	CONNECTOR BRACKET	
3	SDSP3006M	SCREW, ×2	
4	PRD43920	BRACKET(FUSE)	
⚠ 5	QMG0301-004	FUSE HOLDER	
⚠ 6	PU50316	FUSE COVER	
⚠ 10	QMF51E2-2R0	FUSE, F1	T2.0A
11	SDST3006M	SCREW, ×2	
12	LPSP3006Z	SCREW, ×2	
13	SPSF3006Z	SCREW, ×9	
14	DPSP3006Z	SCREW	
15	PRD30886	BRACKET(CONNECTOR)	
16	SDSP3006M	SCREW, ×3	
17	PRD42023	SW COVER	
18	PRD43921	BRACKET(POWER SW)	
19	SDSP2606M	SCREW, ×2	
⚠ 20	PGZ01725	SWITCH	
21	PRD43421-02	BRACKET	
22	SDST3006M	SCREW, ×2	
23	PU52931	CONNECTOR COVER	
⚠ 24	PGZ00760	AC INLET	

5.6 MECHANISM UNIT ASSEMBLY M6



MECHANISM UNIT ASSEMBLY M6

M6MM□□□□

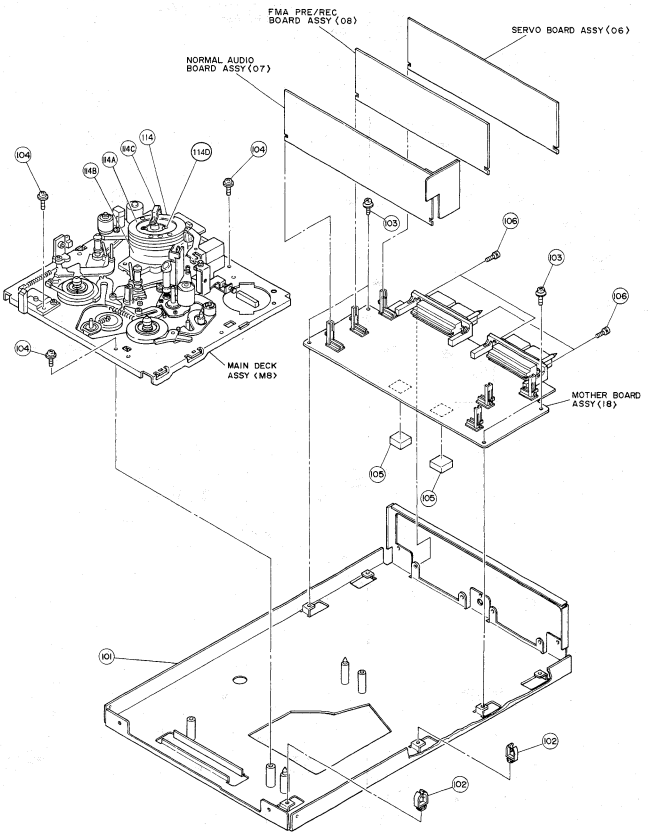
⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	101	PRD10226-01-01	CASSETTE PANEL
	102	PRD43457-02	SPECIAL SCREW, ×2
	103	REE2500	"E"RING, ×2
	104	SDSP3006M	SCREW, ×6
	105	SDSF2606Z	SCREW, ×5
	106	PRD20341-01-03	PANEL BRACKET
	107	PRD30030-74	PAD, ×2
	108	SDST3006Z	SCREW, ×2
	109	SPST2606Z	SCREW, ×2
	110	SBST3006Z	SCREW
	111	PRD42486A-02	CLEANER ARM ASSY
	112	PRD42664	CLEANER HOLDER
	113	Q03093-829	WASHER
	114	PQM30017	SLIT WASHER
	115	PRD40510-01-02	CLEANER
	116	PRD30024-42	SPRING
	117	PRD42487A-02	CLEANER BASE ASSY
	118	PQM30017	SLIT WASHER
⚠	119	PU59401-2	SOLENOID
	120	LPSP2003Z	SCREW, ×2
	121	PQM30002-187	COMPRESSION SPRING
	122	LPSP2606Z	SCREW
	125	PGS20573B-02	CASSETTE HOUSING ASSY
⚠	125A	PGZ01279	MODE MOTOR (CASSETTE)
	125B	DV710SR223M16	VARISTOR
	125C	SPSP2004Z	SCREW, ×3
	125D	PRD30022-15	BELT (CASSETTE)
	125E	SPSP2604Z	SCREW
	125F	SPST2605Z	SCREW, ×2
	125G	PRD42804	MOTOR PULLEY
	125H	YWS2603B	SET SCREW
	125I	PRD42743A-02	CASSETTE SLIDER ASSY, ×2
	125J	LPSP3004Z	SCREW, ×2
	125K	PRD42588A	GUIDE ASSY
	125L	LPSP3006Z	SCREW
	125M	PRD42732-01-01	CASSETTE GUIDE(L)
	125N	PRD42731-01-01	CASSETTE GUIDE(R)
	126	SDST2605Z	SCREW, ×2
	127	SDST2605Z	SCREW, ×3
	128	PU49485	WIRE CLAMP
	129	SDST2610Z	SCREW

MECHANISM BASE ASSEMBLY M7

M7MM□□□□

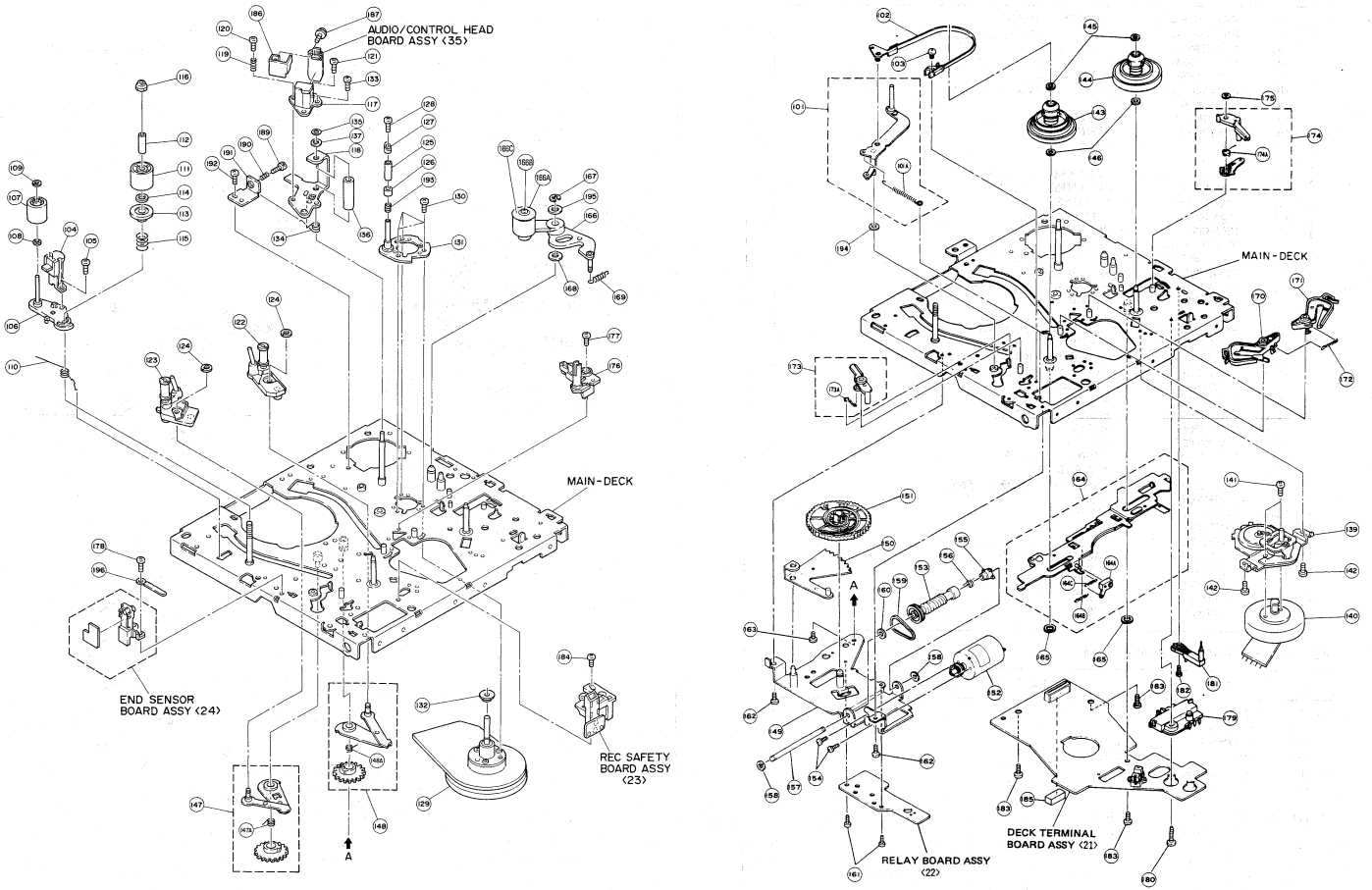
⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	101	PRD10258A	MECHA BASE ASSY
	102	PU59311-3	WIRE CLAMP, ×2
	103	SDSP3006Z	SCREW, ×4
	104	DPSP4010Z	SCREW, ×3
	105	PRD30030-55	PAD, ×2
	106	LPSP3006Z	SCREW, ×4
⚠	114	PDV2185D	DRUM ASSY
	114A	PDM2104B-9	UPPER DRUM ASSY
	114B	PRD20410B	LOWER DRUM MOTOR ASSY
	114C	PRD44133A	BRUSH ASSY
	114D	PDM4165A	DRUM SCREW ASSY, ×2(FOR UPPER)
	114E	LPSP2606Z	SCREW, FOR BRUSH

5.7 MECHANISM BASE ASSEMBLY M7



5-11

5.8 MECHANISM ASSEMBLY M8



5-12

MECHANISM ASSEMBLY M8

M8MM□□□□

⚠ REF No.	PART No.	PART NAME, DESCRIPTION
101	PRD43785A	TENSION ARM ASSY
101A	PQ41952-3	SPRING
102	PQ41948A	TENSION BAND ASSY
103	SDST2606Z	SCREW
104	PU57641-2	FULL ERASE HEAD
105	SPSG2606Z	SCREW
106	PQ43299A-2	FE HEAD SUB ASSY
107	PQ43298A	ROLLER ASSY
108	Q03093-829	WASHER
109	PQM30017	SLIT WASHER
110	PQ41954-1-1	TORSION SPRING
111	PQ41955	IMPEDANCE ROLLER
112	PRD42512	COLLAR
113	PQ41957	LOWER FLANGE
	or PQ42958	LOWER FLANGE
114	PQM30018-39	SPACER
	or PQM30018-50	SPACER
115	PQM30002-124	COMPRESSION SPRING
116	PQ40353	NYLON NUT
117	PGZ01675	AUDIO/CONTROL HEAD
118	PRD30842	HEAD ARM
119	PQM30002-197	COMPRESSION SPRING
120	SDSP2612Z	SCREW
121	PQ44621	SPECIAL SCREW
122	PRD43323C	POLE BASE ASSY(TAKE-UP)
123	PRD43905A	POLE BASE ASSY(SUPPLY)
124	PQM30017-5	SLIT WASHER, ×2
125	PRD43741-01-01	TAPE GUIDE
126	PRD43740	GUIDE FLANGE
127	PQ42999-2-1	GUIDE POLE CAP
128	PRD43165	SPECIAL SCREW
⚠ 129	PGZ01668	CAPSTAN MOTOR
130	LPSP2610Z	SCREW, ×3
131	PRD43736A	GUIDE POLE ASSY
132	PGD40670	SPECIAL WASHER
133	PQ43687B	SPECIAL SCREW
134	PRD43698-01-01	TORSION SPRING
135	PU49276	NYLON NUT
136	PRD43809	BUSHING
137	PRD30026-41	COLLAR
139	PGZ01662	IDLER UNIT
⚠ 140	PU58636W	REEL MOTOR
⚠	or PU58636M	REEL MOTOR
141	LPSP2604Z	SCREW, ×2
142	SPST2606Z	SCREW, ×2
143	PU59250-1-2	REEL DISK (SUPPLY)
144	PU58638-1-2	REEL DISK (TAKE-UP)
145	PQM30017-5	SLIT WASHER, ×2
146	Q03093-828	WASHER, ×2
147	PQ41979A-5	LOADING ARM ASSY (SUPLLY)
147A	PQ42677	TORSION SPRING (SUPPLY)
148	PQ41985B-3	LOADING ARM ASSY (TAKE-UP)
148A	PQ41990	TORSION SPRING
149	PQ41992A-2	CAM BRACKET SUB ASSY
150	PQ41994A-3	ARM GEAR ASSY

⚠ REF No.	PART No.	PART NAME, DESCRIPTION
151	PQ20577-2	CONTROL CAM
⚠ 152	PQ41996B	MODE MOTOR ASSY
⚠	or PQ41996C	MODE MOTOR ASSY
⚠	or PQ41996A	MODE MOTOR ASSY
153	PQ41998A	WORM ASSY
154	LPSP2604Z	SCREW, ×2
155	PQ42001	WINDMILL
156	PRD43278	CLUTCH SPRING
157	PQ42003	WORM SHAFT
158	PQM30017-5	SLIT WASHER, ×2
159	PQM30003-20	MODE BELT
160	PQM30018-22	SPACER
161	SPST2606Z	SCREW, ×2
162	SPST2606Z	SCREW, ×2
163	LPSP2604Z	SCREW
164	PQ42038D	PLATE ASSY
164A	PQ31044-1-2	LOCK LEVER
164B	PQM30001-191	TENSION SPRING
164C	PQM30001-211	TENSION SPRING
165	PQM30017-28	SLIT WASHER, ×2
166	PRD43309A-02	PINCH ROLLER ARM ASSY
166A	PQ42007B-2	PINCH ROLLER ASSY
166B	SPSH1760Z	MINI SCREW
166C	PQ42012	PINCH ROLLER CAP
167	REE4000	"E" RING
168	Q03093-833	WASHER
169	PRD30024-63	TENSION SPRING
170	PQ42019A-6	MAIN BRAKE ASSY (SUPPLY)
171	PQ42020B	MAIN BRAKE ASSY (TAKE-UP)
172	PQM30001-216	TENSION SPRING
173	PQ42021A-3	SUB BRAKE ASSY (SUPPLY)
173A	PQ42023-1-2	TENSION SPRING
174	PQ42037A-2	SUB BRAKE ASSY (TAKE-UP)
174A	PQ42028-1-1	TORSION SPRING
175	PQM30017-6	SLIT WASHER
176	PU59925-1-1	LED HOLDER
177	SPST2606Z	SCREW
178	SPST2606Z	SCREW
179	PU60444	SLIDE SWITCH
180	SDSP2610Z	SCREW
181	PU59919-1-1	CASSETTE SWITCH
182	SDST2608Z	SCREW
183	SDSP2606Z	SCREW, ×3
184	SDST2606Z	SCREW
185	PRD30030-08	PAD
186	PRD42670-01-01	BOARD BRACKET
187	DPSP2005Z	SCREW
189	PU55310	SOCKET HEAD BOLT
190	PRD30023-41	COMPRESSION SPRING
191	PRD43691	STOPPER
192	SDST2606Z	SCREW
193	PRD30023-46	SPRING
194	Q03093-830	WASHER
195	Q03093-849	WASHER
196	PU49485-3	WIRE CLAMP

SECTION 6
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

<01>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
**********			
			**********
			* 9. AUDIO MAIN BOARD ASSEMBLY <01> *
			**********
	PWBA	PRK10072C	AUDIO MAIN BOARD ASSY, EP
		PRK10072D	AUDIO MAIN BOARD ASSY, E/ED
	IC1	AN6298NS	IC
	IC2	AN6298NS	IC
	IC3	AN3922NS	IC
	IC4	AN3922NS	IC
	IC5	M5218AL	IC
	IC6	M5218AL	IC
	IC7	AN607P	IC
	IC8	AN607P	IC
	IC9	PB20167B-02	FMA MODULE BOARD ASSY, EP
	IC10	TK15021	IC
	IC11	TK15021	IC
	IC12	TK15021	IC
	IC13	M5218AL	IC, EP
	IC14	M5218AL	IC
	IC15	M5218AL	IC, EP
	IC16	M5218AL	IC, EP
	IC17	M5218AL	IC
	IC18	UPC78N05	IC, EP
	Q1	2SC1740S(S)	TRANSISTOR
	Q2	2SC1740S(S)	TRANSISTOR
	Q3	2SC1740S(S)	TRANSISTOR
	Q4	2SC1740S(S)	TRANSISTOR
	Q5	2SC1740S(S)	TRANSISTOR
	Q6	2SC1740S(S)	TRANSISTOR
	Q7	2SC3311A(RS)	TRANSISTOR, EP
	Q8	2SC3311A(RS)	TRANSISTOR, EP
	Q9	2SC1740S(S)	TRANSISTOR, EP
	Q10	2SD973AR	TRANSISTOR
	Q11	2SD973AR	TRANSISTOR
	Q12	DTC124EK	TRANSISTOR, EP
	Q13	DTA124EK	TRANSISTOR, EP
	Q14	2SC1740S(S)	TRANSISTOR, EP
	Q17	2SC3311A(RS)	TRANSISTOR, EP
	Q18	2SC3311A(RS)	TRANSISTOR, EP
	Q19	DTC124EK	TRANSISTOR, EP
	Q20	DTA124EK	TRANSISTOR, EP
	Q21	2SC3311A(RS)	TRANSISTOR, EP
	Q22	2SC3311A(RS)	TRANSISTOR, EP
	Q23	2SC3311A(RS)	TRANSISTOR, EP
	Q24	2SC3311A(RS)	TRANSISTOR, EP
	Q25	DTA124EK	TRANSISTOR
	Q26	DTC124EK	TRANSISTOR
	Q27	2SA1309A(S)	TRANSISTOR
	Q28	DTA124EK	TRANSISTOR
	Q29	DTC124EK	TRANSISTOR
	Q30	DTA124EK	TRANSISTOR, EP
	Q31	DTA124EK	TRANSISTOR, EP
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	D7	RD5.6EB2	ZENER DIODE
	D8	RD5.1EB2	ZENER DIODE
	D9	1SS133	DIODE, EP
	D10	1SS133	DIODE, EP
	D11	1SS133	DIODE
	D12	1SS133	DIODE
	D13	1SS133	DIODE
	D14	1SS133	DIODE
	D15	1SS133	DIODE
	D16	1SS133	DIODE
	D17	1SS133	DIODE
	D18	1SS133	DIODE
	R1	QVZ3513-103	V RESISTOR
	R2	QVZ3513-103	V RESISTOR
	R3	QRV143F-3301	CMF RESISTOR, E/ED
		QVZ3513-332	V RESISTOR, EP
	R4	QRV143F-3301	CMF RESISTOR, E/ED
		QVZ3513-332	V RESISTOR, EP
	R5	QVZ3513-472	V RESISTOR
	R6	QVZ3513-472	V RESISTOR
	R7	QVZ3513-222	V RESISTOR
	R8	QVZ3513-222	V RESISTOR
	R9	QVZ3513-332	V RESISTOR
	R10	QVZ3513-332	V RESISTOR
	R11	QVZ3513-103	V RESISTOR
	R12	QVZ3513-103	V RESISTOR
	R13	QRSA08J-104YN	RESISTOR
	R14	QRSA08J-104YN	RESISTOR
	R15	QRSA08J-104YN	RESISTOR
	R16	QRSA08J-104YN	RESISTOR
	R17	QRSA08J-123YN	RESISTOR
	R18	QRSA08J-123YN	RESISTOR
	R19	QRSA08J-103YN	RESISTOR
	R20	QRSA08J-103YN	RESISTOR
	R21	QRV141F-4700A	CMF RESISTOR
	R22	QRV141F-4700A	CMF RESISTOR
	R23	QRV141F-4701A	CMF RESISTOR
	R24	QRV141F-4701A	CMF RESISTOR
	R25	QRV141F-6201A	CMF RESISTOR
	R26	QRV141F-6201A	CMF RESISTOR
	R27	QRV141F-1201A	CMF RESISTOR
	R28	QRV141F-1201A	CMF RESISTOR
	R29	QRV141F-2401A	CMF RESISTOR
	R30	QRV141F-2401A	CMF RESISTOR
	R31	QRV141F-6800A	CMF RESISTOR
	R32	QRV141F-6800A	CMF RESISTOR
	R33	QRV141F-5601A	CMF RESISTOR
	R34	QRV141F-5601A	CMF RESISTOR
	R35	QRV141F-1802A	CMF RESISTOR
	R36	QRV141F-1802A	CMF RESISTOR
	R37	QRV141F-1602A	CMF RESISTOR
	R38	QRV141F-1602A	CMF RESISTOR
	R39	QRV141F-9101A	CMF RESISTOR
	R40	QRV141F-9101A	CMF RESISTOR
	R41	QRV141F-3301A	CMF RESISTOR
	R42	QRV141F-3301A	CMF RESISTOR
	R43	QRV141F-5601A	CMF RESISTOR
	R44	QRV141F-5601A	CMF RESISTOR
	R45	QRV141F-1002A	CMF RESISTOR
	R46	QRV141F-1002A	CMF RESISTOR
	R47	QRV141F-1101A	CMF RESISTOR
	R48	QRV141F-1101A	CMF RESISTOR
	R49	QRSA08J-152YN	RESISTOR
	R50	QRSA08J-152YN	RESISTOR
	R51	QRSA08J-682YN	RESISTOR
	R52	QRSA08J-682YN	RESISTOR
	R53	QRSA08J-473YN	RESISTOR
	R54	QRSA08J-473YN	RESISTOR
	R55	QRSA08J-473YN	RESISTOR
	R56	QRSA08J-473YN	RESISTOR
	R57	QRSA08J-473YN	RESISTOR
	R58	QRSA08J-473YN	RESISTOR
	R59	QRSA08J-103YN	RESISTOR
	R60	QRSA08J-103YN	RESISTOR
	R61	QRSA08J-332YN	RESISTOR
	R62	QRSA08J-332YN	RESISTOR
	R63	QRV141F-3901A	CMF RESISTOR
	R64	QRV141F-2701A	CMF RESISTOR

<01>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R65	QRSA08J-682YN	RESISTOR
	R66	QRSA08J-682YN	RESISTOR
	R67	QRSA08J-183YN	RESISTOR
	R68	QRSA08J-183YN	RESISTOR
	R69	QRSA08J-102YN	RESISTOR
	R70	QRSA08J-102YN	RESISTOR
	R71	QRSA08J-101YN	RESISTOR
	R72	QRSA08J-101YN	RESISTOR
	R73	QRSA08J-123YN	RESISTOR
	R74	QRSA08J-123YN	RESISTOR
	R75	QRSA08J-473YN	RESISTOR
	R76	QRSA08J-473YN	RESISTOR
	R77	QRSA08J-273YN	RESISTOR
	R78	QRSA08J-273YN	RESISTOR
	R79	QRSA08J-223YN	RESISTOR
	R80	QRSA08J-223YN	RESISTOR
	R81	QRSA08J-821YN	RESISTOR
	R82	QRSA08J-821YN	RESISTOR
	R83	QRSA08J-102YN	RESISTOR
	R84	QRSA08J-102YN	RESISTOR
	R85	QRSA08J-223YN	RESISTOR
	R86	QRSA08J-223YN	RESISTOR
	R87	QRSA08J-223YN	RESISTOR
	R88	QRSA08J-223YN	RESISTOR
	R89	QRSA08J-102YN	RESISTOR
	R90	QRSA08J-102YN	RESISTOR
	R91	QRSA08J-102YN	RESISTOR
	R92	QRSA08J-102YN	RESISTOR
	R93	QRSA08J-0R0Y	RESISTOR
	R94	QRSA08J-0R0Y	RESISTOR
	R95	QRSA08J-0R0Y	RESISTOR
	R96	QRSA08J-0R0Y	RESISTOR
	R97	QRSA08J-472YN	RESISTOR, EP
	R98	QRSA08J-472YN	RESISTOR, EP
	R99	QRSA08J-222YN	RESISTOR, EP
	R100	QRSA08J-222YN	RESISTOR, EP
	R101	QRSA08J-102YN	RESISTOR
	R102	QRSA08J-102YN	RESISTOR
	R103	QRSA08J-104YN	RESISTOR
	R104	QRSA08J-104YN	RESISTOR
	R105	QRSA08J-223YN	RESISTOR
	R106	QRSA08J-223YN	RESISTOR
	R107	QRSA08J-102YN	RESISTOR, EP
	R108	QRSA08J-273YN	RESISTOR, EP
	R109	QRSA08J-273YN	RESISTOR, EP
	R110	QRSA08J-273YN	RESISTOR, EP
	R111	QRSA08J-273YN	RESISTOR, EP
	R112	QRSA08J-102YN	RESISTOR, EP
	R113	QRSA08J-222YN	RESISTOR, EP
	R114	QRSA08J-222YN	RESISTOR, EP
	R115	QRSA08J-472YN	RESISTOR, EP
	R116	QRSA08J-472YN	RESISTOR, EP
	R117	QRSA08J-273YN	RESISTOR, EP
	R118	QRSA08J-682YN	RESISTOR, EP
	R119	QRSA08J-152YN	RESISTOR, EP
	R120	QRSA08J-222YN	RESISTOR, EP
	R121	QRSA08J-333YN	RESISTOR, EP
	R122	QRSA08J-333YN	RESISTOR, EP
	R123	QRSA08J-333YN	RESISTOR, EP
	R124	QRSA08J-103YN	RESISTOR, EP
	R125	QRSA08J-103YN	RESISTOR, EP
	R126	QRSA08J-102YN	RESISTOR, EP
	R127	QRSA08J-0R0Y	RESISTOR, E/ED
	R128	QRSA08J-0R0Y	RESISTOR, E/ED
	R131	QRSA08J-473YN	RESISTOR, EP
	R132	QRSA08J-473YN	RESISTOR, EP
	R133	QRSA08J-473YN	RESISTOR, EP
	R134	QRSA08J-473YN	RESISTOR, EP
	R135	QRSA08J-104YN	RESISTOR, EP
	R136	QRSA08J-104YN	RESISTOR, EP
	R137	QRSA08J-102YN	RESISTOR, EP
	R138	QRSA08J-102YN	RESISTOR, EP
	R139	QRSA08J-561YN	RESISTOR, EP
	R140	QRSA08J-561YN	RESISTOR, EP
	R141	QRSA08J-101YN	RESISTOR
	R142	QRSA08J-101YN	RESISTOR
	R143	QRSA08J-101YN	RESISTOR
	R144	QRSA08J-101YN	RESISTOR
	R145	QRSA08J-473YN	RESISTOR, EP
	R146	QRSA08J-473YN	RESISTOR
	R147	QRSA08J-473YN	RESISTOR, EP
	R148	QRSA08J-473YN	RESISTOR, EP
	R149	QRSA08J-104YN	RESISTOR, EP
	R150	QRSA08J-104YN	RESISTOR, EP
	R151	QRSA08J-102YN	RESISTOR, EP
	R152	QRSA08J-102YN	RESISTOR, EP
	R153	QRSA08J-561YN	RESISTOR, EP
	R154	QRSA08J-561YN	RESISTOR, EP
	R155	QRSA08J-473YN	RESISTOR, EP
	R156	QRSA08J-473YN	RESISTOR, EP
	R157	QRSA08J-473YN	RESISTOR, EP
	R158	QRSA08J-473YN	RESISTOR, EP
	R159	QRSA08J-104YN	RESISTOR, EP
	R160	QRSA08J-104YN	RESISTOR, EP
	R161	QRSA08J-102YN	RESISTOR, EP
	R162	QRSA08J-102YN	RESISTOR, EP
	R163	QRSA08J-561YN	RESISTOR, EP
	R164	QRSA08J-561YN	RESISTOR, EP
	R165	QRSA08J-103YN	RESISTOR
	R166	QRSA08J-102YN	RESISTOR
	R167	QRSA08J-472YN	RESISTOR
	R168	QRSA08J-103YN	RESISTOR
	R169	QRSA08J-103YN	RESISTOR
	R170	QRSA08J-271YN	RESISTOR
	R171	QRSA08J-271YN	RESISTOR
	R172	QRSA08J-561YN	RESISTOR
	R173	QRSA08J-561YN	RESISTOR
	R174	QRSA08J-561YN	RESISTOR, EP
	R175	QRSA08J-561YN	RESISTOR, EP
	R176	QRSA08J-220YN	RESISTOR
	R177	QRSA08J-473YN	RESISTOR
	R178	QRSA08J-473YN	RESISTOR
	R179	QRSA08J-473YN	RESISTOR
	R180	QRSA08J-473YN	RESISTOR
	R181	QRSA08J-124YN	RESISTOR
	R182	QRSA08J-124YN	RESISTOR
	R183	QRSA08J-124YN	RESISTOR
	R184	QRSA08J-124YN	RESISTOR
	C1	QETC1CM-226	E CAPACITOR
	C2	QETC1CM-226	E CAPACITOR
	C3	QETC1EM-475	E CAPACITOR
	C4	QETC1EM-475	E CAPACITOR
	C5	QCSA1HJ-BR0	CAPACITOR
	C6	QCSA1HJ-BR0	CAPACITOR
	C7	QETC1CM-106	E CAPACITOR
	C8	QETC1CM-106	E CAPACITOR
	C9	QETC1CM-476	E CAPACITOR
	C10	QETC1CM-476	E CAPACITOR
	C11	QCSA1HJ-BR0	CAPACITOR
	C12	QCSA1HJ-BR0	CAPACITOR
	C13	QETC1CM-226	E CAPACITOR
	C14	QETC1CM-226	E CAPACITOR
	C15	QETC1CM-107	E CAPACITOR
	C16	QETC1CM-107	E CAPACITOR
	C17	QCFA1HZ-103	CAPACITOR
	C18	QCFA1HZ-103	CAPACITOR
		1SS133	DIODE
	C19	QENC1CM-226	NP E CAPACITOR
	C20	QENC1CM-226	NP E CAPACITOR
	C21	QFP42AF-102M	PP CAPACITOR
	C22	QFP42AF-102M	PP CAPACITOR
	C23	QFP42AF-102M	PP CAPACITOR
	C24	QFP42AF-102M	PP CAPACITOR
	C25	QFP42AF-222	PP CAPACITOR
	C26	QFP42AF-222	PP CAPACITOR
	C27	QFP32AF-103M	PP CAPACITOR
	C28	QFP32AF-103M	PP CAPACITOR
	C29	QFP32AF-103M	PP CAPACITOR
	C30	QFP32AF-103M	PP CAPACITOR
	C31	QENC1CM-106	NP E CAPACITOR
	C32	QENC1CM-106	NP E CAPACITOR
	C33	QENCOJM-476	NP E CAPACITOR
	C34	QENCOJM-476	NP E CAPACITOR
	C35	QETC1CM-106	E CAPACITOR
	C36	QETC1CM-106	E CAPACITOR
	C37	QETC1CM-476	E CAPACITOR
	C38	QETC1CM-476	E CAPACITOR
	C39	QETC1CM-476	E CAPACITOR
	C40	QETC1CM-476	E CAPACITOR
	C41	QFP42AF-222	PP CAPACITOR
	C42	QFP42AF-222	PP CAPACITOR
	C43	QFP42AF-102	PP CAPACITOR
	C44	QFP42AF-102	PP CAPACITOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C45	QFP42AF-222	PP CAPACITOR
	C46	QFP42AF-222	PP CAPACITOR
	C47	QETC1CM-476	E CAPACITOR
	C48	QETC1CM-476	E CAPACITOR
	C49	QETC1EM-475	E CAPACITOR
	C50	QETC1EM-475	E CAPACITOR
	C51	QFP32AF-223M	PP CAPACITOR
	C52	QFP32AF-223M	PP CAPACITOR
	C53	QETC1CM-106	E CAPACITOR
	C54	QETC1CM-106	E CAPACITOR
	C55	QENC1CM-226	NP E CAPACITOR
	C56	QENC1CM-226	NP E CAPACITOR
	C57	QETC1CM-106	E CAPACITOR
	C58	QETC1CM-106	E CAPACITOR
	C67	QETC1CM-106	E CAPACITOR
	C68	QETC1CM-106	E CAPACITOR
	C69	QETC1CM-106	E CAPACITOR
	C70	QETC1CM-106	E CAPACITOR
	C71	QCSA1HJ-561	CAPACITOR
	C72	QCSA1HJ-561	CAPACITOR
	C73	QFN31HJ-222	M CAPACITOR
	C74	QFN31HJ-222	M CAPACITOR
	C75	QETCOJM-476	E CAPACITOR
	C76	QETCOJM-476	E CAPACITOR
	C77	QCFA1HZ-103	CAPACITOR
	C78	QCFA1HZ-103	CAPACITOR
	C79	QETC1HM-105	E CAPACITOR
	C80	QETC1HM-105	E CAPACITOR
	C81	QCSA1HJ-561	CAPACITOR
	C82	QCSA1HJ-561	CAPACITOR
	C83	QETC1EM-475	E CAPACITOR
	C84	QETC1EM-475	E CAPACITOR
	C85	QFN31HJ-272	M CAPACITOR
	C86	QFN31HJ-272	M CAPACITOR
	C87	QETCOJM-476	E CAPACITOR
	C88	QETCOJM-476	E CAPACITOR
	C89	QCTA1CH-101	CAPACITOR
	C90	QCTA1CH-101	CAPACITOR
	C91	QCFA1HZ-103	CAPACITOR
	C92	QCFA1HZ-103	CAPACITOR
	C93	QCSA1HJ-820	CAPACITOR
	C94	QCSA1HJ-820	CAPACITOR
	C95	QETC1CM-476	E CAPACITOR
	C96	QETC1CM-476	E CAPACITOR
	C97	QCFA1HZ-103	CAPACITOR
	C98	QCFA1HZ-103	CAPACITOR
	C99	QCFA1HZ-103	CAPACITOR
	C100	QCFA1HZ-103	CAPACITOR
	C101	QCSA1HJ-680	CAPACITOR
	C102	QCSA1HJ-470	CAPACITOR
	C103	QCSA1HJ-680	CAPACITOR
	C104	QCSA1HJ-470	CAPACITOR
	C105	QCFA1HZ-103	CAPACITOR
	C106	QCFA1HZ-103	CAPACITOR
	C107	QCFA1HZ-103	CAPACITOR, EP
	C108	QCFA1HZ-103	CAPACITOR, EP
	C109	QCFA1HZ-103	CAPACITOR
	C110	QCFA1HZ-103	CAPACITOR
	C111	QCFA1HZ-103	CAPACITOR
	C112	QCFA1HZ-103	CAPACITOR
	C113	QETC1CM-476	E CAPACITOR
	C114	QETC1CM-476	E CAPACITOR
	C115	QCFA1HZ-103	CAPACITOR
	C116	QCFA1HZ-103	CAPACITOR
	C117	QCFA1HZ-103	CAPACITOR, EP
	C118	QCFA1HZ-103	CAPACITOR, EP
	C119	QETC1CM-226	E CAPACITOR
	C120	QETC1CM-226	E CAPACITOR
	C121	QETC1CM-476	E CAPACITOR, EP
	C122	QCFA1HZ-103	CAPACITOR, EP
	C123	QCFA1HZ-103	CAPACITOR, EP
	C124	QCFA1HZ-103	CAPACITOR, EP
	C125	QETC1CM-476	E CAPACITOR, EP
	C126	QCFA1HZ-103	CAPACITOR, EP
	C127	QCFA1HZ-103	CAPACITOR, EP
	C128	QCFA1HZ-103	CAPACITOR, EP
	C129	QCFA1HZ-103	CAPACITOR, EP
	C130	QCFA1HZ-103	CAPACITOR, EP
	C131	QETC1CM-106	E CAPACITOR, EP
	C132	QETC1CM-106	E CAPACITOR, EP
	C133	QETC1AM-476	E CAPACITOR, EP

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C134	QETC1AM-476	E CAPACITOR, EP
	C135	QENC1CM-106	NP E CAPACITOR, EP
	C136	QENC1CM-106	NP E CAPACITOR, EP
	C137	QETC1CM-106	E CAPACITOR, EP
	C138	QETC1CM-106	E CAPACITOR, EP
	C139	QETC1CM-226	E CAPACITOR, EP
	C140	QETC1CM-226	E CAPACITOR, EP
	C141	QETC1AM-336	E CAPACITOR, EP
	C142	QETC1AM-336	E CAPACITOR, EP
	C143	QETC1CM-106	E CAPACITOR, EP
	C144	QETC1AM-107	E CAPACITOR, EP
	C145	QCFA1HZ-103	CAPACITOR, EP
	C146	QETC1CM-476	E CAPACITOR, EP
	C147	QCSA1HJ-102	CAPACITOR, EP
	C148	QETC1HM-225	E CAPACITOR, EP
	C149	QETC1HM-225	E CAPACITOR, EP
	C150	QETC1AM-336	E CAPACITOR, EP
	C151	QETC1AM-336	E CAPACITOR, EP
	C152	QETC1AM-336	E CAPACITOR, EP
	C153	QENC1EM-475	NP E CAPACITOR, EP
	C154	QENC1EM-475	NP E CAPACITOR, EP
	C155	QCFA1HZ-103	CAPACITOR, EP
	C156	QETC1CM-476	E CAPACITOR, EP
	C157	QENC1EM-475	NP E CAPACITOR
	C158	QENC1EM-475	NP E CAPACITOR
	C159	QETC1CM-476	E CAPACITOR
	C160	QETC1CM-476	E CAPACITOR, EP
	C161	QENC1EM-475	NP E CAPACITOR
	C162	QENC1EM-475	NP E CAPACITOR
	C163	QETC1CM-226	E CAPACITOR, EP
	C164	QETC1CM-226	E CAPACITOR, EP
	C165	QENC1EM-475	NP E CAPACITOR
	C166	QENC1EM-475	NP E CAPACITOR
	C167	QETC1CM-476	E CAPACITOR
	C168	QETC1CM-476	E CAPACITOR
	C169	QETC1EM-475	E CAPACITOR
	C170	QETC1EM-475	E CAPACITOR
	C171	QETC1EM-475	E CAPACITOR
	C172	QETC1EM-475	E CAPACITOR
	C173	QETC1CM-226	E CAPACITOR
	C174	QETC1CM-226	E CAPACITOR
	C175	QENC1EM-475	NP E CAPACITOR
	C176	QENC1EM-475	NP E CAPACITOR
	C177	QENC1EM-475	NP E CAPACITOR
	C178	QENC1EM-475	NP E CAPACITOR
	C179	QENC1EM-475	NP E CAPACITOR
	C180	QENC1EM-475	NP E CAPACITOR
	C181	QETC1CM-476	E CAPACITOR
	C182	QETC1CM-476	E CAPACITOR, EP
	C183	QENC1EM-475	NP E CAPACITOR, EP
	C184	QENC1EM-475	NP E CAPACITOR, EP
	C185	QETC1CM-226	E CAPACITOR, EP
	C186	QETC1CM-226	E CAPACITOR, EP
	C187	QENC1EM-475	NP E CAPACITOR, EP
	C188	QENC1EM-475	NP E CAPACITOR, EP
	C189	QETC1CM-226	E CAPACITOR, EP
	C190	QETC1CM-226	E CAPACITOR, EP
	C191	QETC1CM-476	E CAPACITOR, EP
	C192	QCFA1HZ-103	CAPACITOR
	C193	QETC1CM-476	E CAPACITOR
	C194	QETC1EM-477	E CAPACITOR
	C195	QETC1CM-107	E CAPACITOR
	C196	QETC1CM-107	E CAPACITOR
	C197	QETC1EM-475	E CAPACITOR
	C198	QETC1EM-475	E CAPACITOR
	C199	QETC1EM-475	E CAPACITOR
	C200	QETC1EM-475	E CAPACITOR
	C201	QETC1HM-105	E CAPACITOR, EP
	C202	QETC1CM-106	E CAPACITOR, EP
	L1	PU48530-271J	COIL
	L2	PU48530-271J	COIL
	L3	PU48530-101J	COIL
	L4	PU48530-101J	COIL
	L5	PU48530-271J	COIL
	L6	PU48530-271J	COIL
	L7	PU48530-121J	COIL
	L8	PU48530-101J	COIL
	L9	PU48530-101J	COIL, EP
	L10	PU48530-271J	COIL, EP
	L11	PU48530-101J	COIL, EP
	L12	PU48530-101J	COIL, EP

<01><02>

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	BPF1	PU60610	BAND PASS FILTER(1.4MHZ), EP
	BPF2	PU60611	BAND PASS FILTER(1.8MHZ), EP
	BPF3	PU60610	BAND PASS FILTER(1.4MHZ), EP
	BPF4	PU60611	BAND PASS FILTER(1.8MHZ), EP
	TP1	PU54008	TEST-PIN, X41
	CN1	PU5B844-4R	CONNECTOR
	CN2	PU5B844-6	CONNECTOR
	CN3	PU5B844-4R	CONNECTOR
	CN4	PU5B844-4Y	CONNECTOR
	CN5	PU5B844-4	CONNECTOR
	CN6	PU5B844-4R	CONNECTOR, EP
	CN7	PU5B844-4	CONNECTOR, EP
	CN8	PU5B844-4Y	CONNECTOR, EP
	CN9	PU5B844-7	CONNECTOR, EP
	CN10	PU5B844-7R	CONNECTOR, EP
	CN11	PU5B844-4Y	CONNECTOR
	CN12	PU5B844-4	CONNECTOR
	CN13	PU5B844-9	CONNECTOR
	CN14	PU5B844-4R	CONNECTOR
	CN15	PU5B844-3	CONNECTOR
	CN16	PU5B844-4	CONNECTOR, E/ED
	CP1	ICP-F10	CIRCUIT PROTECTOR
	CP2	ICP-F10	CIRCUIT PROTECTOR

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* 10. VIDED (A) BOARD ASSEMBLY <02> *
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— BR-7020EP —

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PRK10126A	VIDED A BOARD ASSY, EP
	IC1	TA7347P	IC
	IC2	AN60BP	IC
	IC3	AN60BP	IC
	IC4	TA7347P	IC
	IC6	LA7324A	IC
	IC7	LC8992	IC
	IC8	AN6366N	IC
	IC9	LA7332	IC
	IC10	AN60BP	IC
	IC11	AN607P	IC
	IC12	M51204TL	IC
	Q1	2SC2647C	TRANSISTOR
	Q3	2SB642(Q)	TRANSISTOR
	Q4	2SC2647C	TRANSISTOR
	Q5	2SC2647C	TRANSISTOR
	Q6	2SC2647C	TRANSISTOR
	Q7	2SC2647C	TRANSISTOR
	Q8	2SC2647C	TRANSISTOR
	Q9	2SC2647C	TRANSISTOR
	Q10	2SC2647C	TRANSISTOR
	Q11	2SC2647C	TRANSISTOR
	Q12	2SB642(Q)	TRANSISTOR
	Q13	2SB642(Q)	TRANSISTOR
	Q14	2SD638Q	TRANSISTOR
	Q15	2SC2647C	TRANSISTOR
	Q16	2SC2647C	TRANSISTOR
	Q17	2SC2647C	TRANSISTOR
	Q18	DTC144EF	TRANSISTOR
	Q19	2SB642(Q)	TRANSISTOR
	Q20	2SC2647C	TRANSISTOR
	Q21	DTC144EF	TRANSISTOR
	Q22	2SC2647C	TRANSISTOR
	Q23	2SC2647C	TRANSISTOR
	Q24	2SC2647C	TRANSISTOR
	Q25	2SC2647C	TRANSISTOR
	Q26	2SC2647C	TRANSISTOR
	Q27	2SC2647C	TRANSISTOR
	Q28	2SB642(Q)	TRANSISTOR
	Q29	2SC2647C	TRANSISTOR
	Q31	DTC144EF	TRANSISTOR
	Q32	DTC144EF	TRANSISTOR
	Q33	2SC2647C	TRANSISTOR
	Q34	2SB642(Q)	TRANSISTOR
	Q35	DTC144EF	TRANSISTOR
	Q36	DTC144EF	TRANSISTOR
	Q37	DTC144EF	TRANSISTOR
	Q38	DTC114YF	TRANSISTOR
	Q39	DTC144EF	TRANSISTOR
	Q40	DTC144EF	TRANSISTOR
	Q41	2SC2647C	TRANSISTOR
	Q42	2SC2647C	TRANSISTOR
	Q43	DTA144EF	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	RD9.1EB2	ZENER DIODE
	D5	1SS99	DIODE
	D6	1SS133	DIODE
	D8	1SS133	DIODE
	D10	1SS133	DIODE
	D11	RD10EB2	ZENER DIODE
	D12	1SS133	DIODE
	D13	1SS133	DIODE
	R1	QRD161J-223	RESISTOR
	R2	QRD161J-223	RESISTOR
	R3	QVZ3513-471	V RESISTOR
	R4	QRD161J-153	RESISTOR
	R5	QRD161J-181	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-102	RESISTOR
	R8	QRD161J-181	RESISTOR
	R9	QRD161J-222	RESISTOR
	R10	QRD161J-821	RESISTOR
	R11	QRD161J-181	RESISTOR
	R12	QRD161J-153	RESISTOR
	R13	QRD161J-681	RESISTOR
	R14	QRD161J-102	RESISTOR
	R15	QRD161J-561	RESISTOR
	R16	QRD161J-102	RESISTOR
	R17	QRD161J-471	RESISTOR
	R18	QRD161J-223	RESISTOR
	R19	QRD161J-103	RESISTOR
	R20	QRD161J-821	RESISTOR
	R21	QRD161J-333	RESISTOR
	R22	QRD161J-123	RESISTOR
	R23	QRD161J-152	RESISTOR
	R24	QVZ3513-681	V RESISTOR
	R25	QRD161J-391	RESISTOR
	R26	QRD161J-101	RESISTOR
	R27	QRD161J-333	RESISTOR
	R28	QRD161J-823	RESISTOR
	R29	QRD161J-102	RESISTOR
	R30	QRD161J-222	RESISTOR
	R31	QRD161J-562	RESISTOR
	R32	QRD161J-223	RESISTOR
	R33	QRD161J-102	RESISTOR
	R34	QRD161J-101	RESISTOR
	R35	QRD161J-102	RESISTOR
	R36	QVZ3513-222	V RESISTOR
	R37	QRD161J-0R0	RESISTOR
	R38	QRD161J-392	RESISTOR
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-223	RESISTOR
	R41	QRD161J-122	RESISTOR
	R42	QRD161J-222	RESISTOR
	R43	QRD161J-221	RESISTOR
	R44	QRD161J-152	RESISTOR
	R45	QRD161J-102	RESISTOR
	R46	QRD161J-472	RESISTOR
	R47	QRD161J-0R0	RESISTOR
	R49	QRD161J-181	RESISTOR
	R50	QRD161J-331	RESISTOR
	R51	QRD161J-750	RESISTOR
	R52	QRD161J-102	RESISTOR
	R53	QRD161J-102	RESISTOR
	R54	QRD161J-103	RESISTOR
	R55	QRD161J-223	RESISTOR
	R56	QRD161J-331	RESISTOR
	R57	QVZ3513-471	V RESISTOR
	R58	QRD161J-273	RESISTOR
	R59	QRD161J-183	RESISTOR
	R61	QRD161J-333	RESISTOR
	R62	QRD161J-333	RESISTOR
	R63	QRD161J-222	RESISTOR
	R64	QVZ3513-153	V RESISTOR
	R65	QVZ3513-103	V RESISTOR
	R66	QRD161J-751	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R67	QRD161J-272	RESISTOR
	R68	QRD161J-103	RESISTOR
	R69	QRD161J-105	RESISTOR
	R70	QRD161J-334	RESISTOR
	R71	QRD161J-562	RESISTOR
	R72	QRD161J-332	RESISTOR
	R73	QRD161J-154	RESISTOR
	R74	QRD161J-334	RESISTOR
	R75	QRD161J-181	RESISTOR
	R76	QVZ3513-472	V RESISTOR
	R77	QVZ3513-473	V RESISTOR
	R78	QRD161J-474	RESISTOR
	R79	QRD161J-104	RESISTOR
	R80	QRD161J-472	RESISTOR
	R81	QVZ3513-472	V RESISTOR
	R82	QRD161J-152	RESISTOR
	R83	QRD161J-102	RESISTOR
	R84	QRD161J-103	RESISTOR
	R85	QRD161J-681	RESISTOR
	R87	QRD161J-471	RESISTOR
	R88	QRD161J-681	RESISTOR
	R89	QRD161J-561	RESISTOR
	R90	QRD161J-222	RESISTOR
	R91	QRD161J-391	RESISTOR
	R92	QRD161J-391	RESISTOR
	R93	QRD161J-222	RESISTOR
	R94	QRD161J-222	RESISTOR
	R95	QRD161J-102	RESISTOR
	R96	QRD161J-102	RESISTOR
	R97	QRD161J-102	RESISTOR
	R98	QRD161J-223	RESISTOR
	R99	QRD161J-103	RESISTOR
	R100	QRD161J-331	RESISTOR
	R101	QVZ3513-681	V RESISTOR
	R102	QRD161J-273	RESISTOR
	R103	QRD161J-183	RESISTOR
	R104	QRD161J-102	RESISTOR
	R105	QRD161J-391	RESISTOR
	R106	QRD161J-392	RESISTOR
	R107	QRD161J-563	RESISTOR
	R108	QRD161J-103	RESISTOR
	R109	QRD161J-393	RESISTOR
	R110	QRD161J-153	RESISTOR
	R111	QVZ3513-222	V RESISTOR
	R112	QRD161J-102	RESISTOR
	R113	QRD161J-102	RESISTOR
	R114	QRD161J-563	RESISTOR
	R116	QRD161J-472	RESISTOR
	R117	QRD161J-392	RESISTOR
	R118	QRD161J-822	RESISTOR
	R120	QRD161J-563	RESISTOR
	R121	QRD161J-102	RESISTOR
	R122	QRD161J-122	RESISTOR
	R123	QRD161J-475	RESISTOR
	R124	QRD161J-102	RESISTOR
	R125	QRD161J-102	RESISTOR
	R126	QRD161J-332	RESISTOR
	R127	QRD161J-102	RESISTOR
	R128	QRD161J-102	RESISTOR
	R129	QRD161J-152	RESISTOR
	R130	QRD161J-331	RESISTOR
	R131	QRD161J-331	RESISTOR
	R132	QRD161J-223	RESISTOR
	R133	QRD161J-681	RESISTOR
	R134	QRD161J-391	RESISTOR
	R135	QRD161J-392	RESISTOR
	R136	QRD161J-102	RESISTOR
	R137	QRD161J-102	RESISTOR
	R138	QRD161J-103	RESISTOR
	R139	QRD161J-103	RESISTOR
	R140	QRD161J-103	RESISTOR
	R141	QRD161J-102	RESISTOR
	R142	QRD161J-472	RESISTOR
	R144	QRD161J-103	RESISTOR
	R145	QRD161J-473	RESISTOR
	R146	QRD161J-103	RESISTOR
	R147	QRD161J-682	RESISTOR
	R148	QRD161J-103	RESISTOR
	R149	QRD161J-223	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R150	QRD161J-223	RESISTOR
	R152	QRD161J-105	RESISTOR
	R153	QRD161J-113	RESISTOR
	R155	QRD161J-392	RESISTOR
	R156	QRD161J-101	RESISTOR
	R157	QRD161J-181	RESISTOR
	R158	QRD161J-472	RESISTOR
	R160	QRD161J-101	RESISTOR
	R161	QRD161J-471	RESISTOR
	R162	QRD161J-223	RESISTOR
	R163	QRD161J-223	RESISTOR
	R164	QRD161J-0R0	RESISTOR
	R165	QRD161J-122	RESISTOR
	R167	QRD161J-0R0	RESISTOR
	R168	QRD161J-332	RESISTOR
	R171	QRD161J-181	RESISTOR
	R200	QRD161J-0R0	RESISTOR
	R201	QRD161J-0R0	RESISTOR
	C1	QETC1AM-476	E CAPACITOR
	C2	QETC1AM-476	E CAPACITOR
	C3	QETC1CM-107	E CAPACITOR
	C4	QCF31HP-223	CAPACITOR
	C5	QENC1AM-476	NP E CAPACITOR
	C6	QCS31HJ-331	CAPACITOR
	C7	QCS31HJ-331	CAPACITOR
	C8	QFN31HK-223	M CAPACITOR
	C10	QFN31HK-223	M CAPACITOR
	C11	QENC1HM-474	E CAPACITOR
	C12	QFP41HG-471	PP CAPACITOR
	C13	QFP41HG-121	PP CAPACITOR
	C14	QCS31HJ-270	CAPACITOR
	C15	QCS31HJ-181	CAPACITOR
	C16	QCS31HJ-221	CAPACITOR
	C17	QENC1CM-106	NP E CAPACITOR
	C18	QFN31HK-103	M CAPACITOR
	C19	QCF31HP-223	CAPACITOR
	C20	QETC0JM-107	E CAPACITOR
	C21	QENC1AM-476	NP E CAPACITOR
	C22	QETC1CM-107	E CAPACITOR
	C23	QCF31HP-223	CAPACITOR
	C24	QENC1AM-476	NP E CAPACITOR
	C27	PU54990-3	E CAPACITOR
	C28	QETC1CM-337	E CAPACITOR
	C29	QETC0JM-476	E CAPACITOR
	C30	QCF31HP-223	CAPACITOR
	C31	QFN31HK-223	M CAPACITOR
	C32	QFN31HK-223	M CAPACITOR
	C33	QCS31HJ-121	CAPACITOR
	C34	QCS31HJ-151	CAPACITOR
	C35	QCS31HJ-150	CAPACITOR
	C36	QCS31HJ-101	CAPACITOR
	C38	QCT25CM-470	CAPACITOR
	C39	QFP41HF-271	PP CAPACITOR
	C40	QCS31HJ-100	CAPACITOR
	C41	QCS31HJ-220	CAPACITOR
	C42	QCS31HJ-330	CAPACITOR
	C43	QCS31HJ-330	CAPACITOR
	C44	QCS31HJ-680	CAPACITOR
	C45	QCS31HJ-101	CAPACITOR
	C46	QENC1HM-474	E CAPACITOR
	C47	QETC1AM-226	E CAPACITOR
	C48	QETC1HM-224	E CAPACITOR
	C49	QETC1EM-335	E CAPACITOR
	C50	QFN31HK-223	M CAPACITOR
	C51	QETC1CM-336	E CAPACITOR
	C52	QETC1HM-225	E CAPACITOR
	C53	QCF31HP-223	CAPACITOR
	C54	QETC0JM-107	E CAPACITOR
	C55	QETC1AM-476	E CAPACITOR
	C56	QFN31HK-223	M CAPACITOR
	C57	QCF31HP-103	CAPACITOR
	C58	QFN31HK-683	M CAPACITOR
	C59	QCS31HJ-560	CAPACITOR
	C60	QCS31HJ-330	CAPACITOR
	C61	QCS31HJ-4R0	CAPACITOR
	C62	QFN31HK-223	M CAPACITOR
	C63	QCF31HP-223	CAPACITOR
	C64	QETC1AM-476	E CAPACITOR
	C65	QETC1HM-105	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C66	QCF31HP-103	CAPACITOR
	C67	QFN31HK-103	M CAPACITOR
	C68	QFN31HK-223	M CAPACITOR
	C69	QETC1HM-105	E CAPACITOR
	C70	QCF31HP-102	CAPACITOR
	C71	QETCOJM-476	E CAPACITOR
	C72	QCF31HP-223	CAPACITOR
	C73	QCS31HJ-471	CAPACITOR
	C74	QCS31HJ-390	CAPACITOR
	C75	QFN31HK-223	M CAPACITOR
	C77	QCS31HJ-330	CAPACITOR
	C78	QCS31HJ-270	CAPACITOR
	C79	QCS31HJ-681	CAPACITOR
	C80	QCF31HP-223	CAPACITOR
	C81	QETCOJM-476	E CAPACITOR
	C82	QFN31HK-223	M CAPACITOR
	C83	QFN31HK-103	M CAPACITOR
	C84	QFN31HK-103	M CAPACITOR
	C85	QEE81VM-474	TANTAL CAPACITOR
	C86	QEEBOJM-476	TANTAL CAPACITOR
	C87	QFN31HK-103	M CAPACITOR
	C88	QETC1HM-105	E CAPACITOR
	C91	QCS31HJ-101	CAPACITOR
	C92	QCF31HP-223	CAPACITOR
	C93	QETCOJM-337	E CAPACITOR
	C95	QCS31HJ-101	CAPACITOR
	C96	QCS31HJ-390	CAPACITOR
	C97	QETC1HM-105	E CAPACITOR
	C98	QFN31HK-103	M CAPACITOR
	C99	QFN31HK-223	M CAPACITOR
	C100	QFN31HK-223	M CAPACITOR
	C101	QFN31HK-223	M CAPACITOR
	C102	QFN31HK-103	M CAPACITOR
	C103	QETC1HM-105	E CAPACITOR
	C104	QETC1HM-105	E CAPACITOR
	C105	QFN31HK-223	M CAPACITOR
	C106	QETC1HM-105	E CAPACITOR
	C107	QFN31HK-473	M CAPACITOR
	C108	QFN31HK-223	M CAPACITOR
	C109	QFN31HK-223	M CAPACITOR
	C110	QFN31HK-223	M CAPACITOR
	C111	QCS31HJ-221	CAPACITOR
	C112	QFN31HK-473	M CAPACITOR
	C113	QCF31HP-223	CAPACITOR
	C114	QETC1CM-336	E CAPACITOR
	C115	QETCOJM-476	E CAPACITOR
	C116	QETC1AM-107	E CAPACITOR
	C117	QETCOJM-337	E CAPACITOR
	C118	QETC1CM-476	E CAPACITOR
	C119	QETCOJM-337	E CAPACITOR
	C120	QENC1CM-106	NP E CAPACITOR
	C121	QCS31HJ-221	CAPACITOR
	C122	QCF31HP-102	CAPACITOR
	C123	QFN31HK-563	M CAPACITOR
	C124	QFN31HK-223	M CAPACITOR
	C125	QCS31HJ-101	CAPACITOR
	C127	QCS31HJ-330	CAPACITOR
	C128	QCF31HP-223	CAPACITOR
	C132	QCS31HJ-180	CAPACITOR
	C133	QETC1HM-104	E CAPACITOR
	C134	QCS31HJ-220	CAPACITOR
	C135	QFN31HK-103	M CAPACITOR
	C138	QCS31HJ-270	CAPACITOR
	L1	PU48530-221J	COIL
	L2	PU48530-181J	COIL
	L3	PU48530-270J	COIL
	L4	PU48530-5R6J	COIL
	L5	PU48530-470J	COIL
	L6	PU48530-221J	COIL
	L7	PU48530-221J	COIL
	L8	PU48530-221J	COIL
	L9	PU48530-330J	COIL
	L10	PU48530-820J	COIL
	L12	PU48530-221J	COIL
	L13	PU48530-560J	COIL
	L14	PU48530-330J	COIL
	L15	PU48530-221J	COIL
	L16	PU48530-121J	COIL
	L17	PU48530-270J	COIL
	L19	PU48530-470J	COIL
	L20	PU48530-560J	COIL

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	L21	PU48530-221J	COIL
	L22	PU48530-3R3K	COIL
	L23	PU48530-180J	COIL
	L24	PU48530-221J	COIL
	L25	PU48530-100J	COIL
	L26	PU48530-271J	COIL
	L27	PU48530-221J	COIL
	L28	PU48530-220J	COIL
	L29	PU48530-150J	COIL
	L30	PU48530-150J	COIL
	L32	PU48530-270J	COIL
	EQ1	PU58315-2S	EQUALIZER
		OR PU58315	EQUALIZER
		OR PU58315-S	EQUALIZER
	LPF1	PGZ01820	LOW PASS FILTER
	LPF2	PU60871-2	LOW PASS FILTER
	LPF3	PGZ01820	LOW PASS FILTER
	BPF1	PU57072	BAND PASS FILTER
	BPF2	PGZ01819	BAND PASS FILTER
	DL1	PGZ00486	DELAY LINE
	DL3	PU58971-3	COMB FILTER
⚠	X1	PGZ01818	CRYSTAL RESONATOR
⚠	TH1	PU52108-101K	POSITIVE THERMISTOR
⚠	TH2	PU52108-330K	POSITIVE THERMISTOR
	TP1	PU54983	TEST PIN, X12
	CN1	PU58844-4	CONNECTOR
	CN2	PU58844-5	CONNECTOR
	CN3	PU58844-2R	CONNECTOR
	CN4	PU58844-2Y	CONNECTOR
	CN5	PU58844-2Y	CONNECTOR
	CN6	PU58844-2Y	CONNECTOR
	CN7	PU58844-4R	CONNECTOR
	CN8	PU58844-4	CONNECTOR
	CN9	PU58844-5R	CONNECTOR
	CN10	PU58844-2	CONNECTOR
	CN11	PU58844-2	CONNECTOR
		-BR-702OE/ED-	
	PWBA	PRK10107A	VIDEO A BOARD ASSY, E/ED
	IC1	TA7347P	IC
	IC2	TA7347P	IC
	IC5	AN3212S	IC
	IC6	AN6367S	IC
	IC7	MN6163AS	IC
	IC8	AN6366N	IC
	Q1	2SC2647C	TRANSISTOR
	Q2	2SC2647C	TRANSISTOR
	Q3	2SB642(Q)	TRANSISTOR
	Q4	2SC2647C	TRANSISTOR
	Q5	2SC2647C	TRANSISTOR
	Q6	2SC2647C	TRANSISTOR
	Q7	2SC2647C	TRANSISTOR
	Q8	2SC2647C	TRANSISTOR
	Q9	2SB642(Q)	TRANSISTOR
	Q10	2SB642(Q)	TRANSISTOR
	Q13	DTC144EF	TRANSISTOR
	Q14	2SB642(Q)	TRANSISTOR
	Q16	2SC2647C	TRANSISTOR
	Q17	2SC2647C	TRANSISTOR
	Q18	2SC2647C	TRANSISTOR
	Q19	2SC2647C	TRANSISTOR
	Q20	2SC2647C	TRANSISTOR
	Q21	2SC2647C	TRANSISTOR
	Q22	2SB642(Q)	TRANSISTOR
	Q23	2SC2647C	TRANSISTOR
	Q24	DTA144EF	TRANSISTOR
	Q25	2SC2647C	TRANSISTOR
	Q26	2SC2647C	TRANSISTOR
	Q27	2SC2647C	TRANSISTOR
	Q28	2SC2647C	TRANSISTOR
	Q29	2SC2647C	TRANSISTOR
	Q30	2SC2647C	TRANSISTOR
	Q31	2SC2647C	TRANSISTOR
	Q32	2SC2647C	TRANSISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q33	2SC2647C	TRANSISTOR
	Q34	2SC2647C	TRANSISTOR
	Q35	2SC2647C	TRANSISTOR
	Q36	2SC2647C	TRANSISTOR
	Q37	2SC2647C	TRANSISTOR
	Q38	DTC144EF	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	D8	1SS133	DIODE
	D9	1SS133	DIODE
	D12	1SS133	DIODE
	R1	QRD161J-181	RESISTOR
	R2	QRD161J-103	RESISTOR
	R3	QRD161J-183	RESISTOR
	R4	QRD161J-181	RESISTOR
	R5	QRD161J-222	RESISTOR
	R6	QVZ3513-222	V RESISTOR
	R7	QRD161J-333	RESISTOR
	R8	QRD161J-153	RESISTOR
	R9	QRD161J-391	RESISTOR
	R10	QRD161J-391	RESISTOR
	R11	QRD161J-101	RESISTOR
	R12	QRD161J-102	RESISTOR
	R13	QRD161J-272	RESISTOR
	R14	QRD161J-152	RESISTOR
	R15	QRD161J-103	RESISTOR
	R16	QRD161J-103	RESISTOR
	R17	QRD161J-181	RESISTOR
	R18	QRD161J-103	RESISTOR
	R19	QRD161J-183	RESISTOR
	R20	QRD161J-561	RESISTOR
	R21	QRD161J-561	RESISTOR
	R22	QRD161J-561	RESISTOR
	R23	QRD161J-102	RESISTOR
	R24	QRD161J-153	RESISTOR
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-103	RESISTOR
	R27	QRD161J-103	RESISTOR
	R28	QRD161J-333	RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QRD161J-222	RESISTOR
	R31	QRD161J-102	RESISTOR
	R32	QRD161J-181	RESISTOR
	R33	QRD161J-391	RESISTOR
	R34	QRD161J-391	RESISTOR
	R35	QRD161J-102	RESISTOR
	R51	QRD161J-222	RESISTOR
	R52	QVZ3513-473	V RESISTOR
	R53	QVZ3513-473	V RESISTOR
	R54	QRD161J-680	RESISTOR
	R55	QVZ3513-682	V RESISTOR
	R56	QRD161J-103	RESISTOR
	R57	QRD161J-222	RESISTOR
	R58	QRV141F-1501AY	CMF RESISTOR
	R59	QRV141F-6341AY	CMF RESISTOR
	R61	QVZ3513-682	V RESISTOR
	R62	QRD161J-683	RESISTOR
	R63	QRD161J-104	RESISTOR
	R64	QRD161J-104	RESISTOR
	R65	QRD161J-103	RESISTOR
	R66	QRD161J-181	RESISTOR
	R67	QVZ3513-223	V RESISTOR
	R69	QRD161J-102	RESISTOR
	R70	QRD161J-471	RESISTOR
	R71	QRD161J-101	RESISTOR
	R72	QRD161J-561	RESISTOR
	R73	QRD161J-470	RESISTOR
	R74	QRD161J-102	RESISTOR
	R75	QRD161J-103	RESISTOR
	R76	QRD161J-223	RESISTOR
	R77	QRD161J-102	RESISTOR
	R78	QRD161J-0R0	RESISTOR
	R79	QRD161J-183	RESISTOR
	R80	QRD161J-103	RESISTOR
	R81	QRD161J-102	RESISTOR
	R82	QRD161J-102	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R83	QRD161J-102	RESISTOR
	R84	QRD161J-103	RESISTOR
	R85	QRD161J-183	RESISTOR
	R86	QRD161J-102	RESISTOR
	R87	QRD161J-472	RESISTOR
	R88	QRD161J-151	RESISTOR
	R89	QRD161J-471	RESISTOR
	R90	QVZ3513-473	V RESISTOR
	R91	QRD161J-103	RESISTOR
	R92	QRD161J-332	RESISTOR
	R93	QRD161J-104	RESISTOR
	R94	QRD161J-222	RESISTOR
	R95	QRD161J-822	RESISTOR
	R96	QRD161J-152	RESISTOR
	R97	QRD161J-682	RESISTOR
	R98	QRD161J-152	RESISTOR
	R99	QRD161J-560	RESISTOR
	R100	QRD161J-682	RESISTOR
	R101	QRD161J-103	RESISTOR
	R102	QRD161J-333	RESISTOR
	R103	QRD161J-102	RESISTOR
	R104	QRD161J-103	RESISTOR
	R105	QRD161J-273	RESISTOR
	R106	QRD161J-393	RESISTOR
	R107	QRD161J-682	RESISTOR
	R108	QRD161J-225	RESISTOR
	R109	QRD161J-682	RESISTOR
	R110	QRD161J-102	RESISTOR
	R111	QRD161J-103	RESISTOR
	R112	QRD161J-682	RESISTOR
	R113	QRD161J-562	RESISTOR
	R114	QRD161J-273	RESISTOR
	R115	QRD161J-181	RESISTOR
	R116	QRD161J-273	RESISTOR
	R117	QRD161J-123	RESISTOR
	R118	QVZ3513-102	V RESISTOR
	R119	QRD161J-331	RESISTOR
	R120	QRD161J-103	RESISTOR
	R121	QRD161J-183	RESISTOR
	R122	QRD161J-561	RESISTOR
	R123	QRD161J-561	RESISTOR
	R126	QRD161J-561	RESISTOR
	R127	QRD161J-102	RESISTOR
	R128	QRD161J-0R0	RESISTOR
	R129	QRD161J-102	RESISTOR
	R130	QRD161J-273	RESISTOR
	R131	QRD161J-183	RESISTOR
	R132	QRD161J-102	RESISTOR
	R133	QRD161J-681	RESISTOR
	R134	QRD161J-102	RESISTOR
	R135	QRD161J-221	RESISTOR
	R136	QRD161J-681	RESISTOR
	R137	QRD161J-181	RESISTOR
	R138	QRD161J-392	RESISTOR
	R139	QRD161J-273	RESISTOR
	R140	QRD161J-153	RESISTOR
	R142	QVZ3513-152	V RESISTOR
	R143	QRD161J-561	RESISTOR
	R144	QRD161J-561	RESISTOR
	R145	QRD161J-102	RESISTOR
	R147	QRD161J-103	RESISTOR
	R148	QRD161J-153	RESISTOR
	R149	QRD161J-103	RESISTOR
	R150	QVZ3513-681	V RESISTOR
	R151	QRD161J-561	RESISTOR
	R152	QRD161J-103	RESISTOR
	R153	QRD161J-183	RESISTOR
	R154	QRD161J-561	RESISTOR
	R155	QRD161J-561	RESISTOR
	R157	QRD161J-103	RESISTOR
	R158	QRD161J-102	RESISTOR
	R159	QRD161J-223	RESISTOR
	R160	QRD161J-103	RESISTOR
	R161	QRD161J-223	RESISTOR
	R163	QRD161J-562	RESISTOR
	R164	QRD161J-223	RESISTOR
	R165	QRD161J-0R0	RESISTOR
	R166	QRD161J-0R0	RESISTOR
	R167	QRD167J-0R0	RESISTOR
△	R168	QRD167J-181	RESISTOR
△	R169	QRD167J-181	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C1	QETC1CM-107	E CAPACITOR
	C2	QCF31HP-223	CAPACITOR
	C3	QETC1CM-476	E CAPACITOR
	C4	QETC1CM-107	E CAPACITOR
	C5	QENC1CM-476	NP E CAPACITOR
	C6	QCT25CH-390	CAPACITOR
	C7	QETC1CM-476	E CAPACITOR
	C8	QETC1CM-476	E CAPACITOR
	C9	QCF31HP-223	CAPACITOR
	C10	QETC1CM-476	E CAPACITOR
	C11	QETC1CM-476	E CAPACITOR
	C12	QETC1CM-476	E CAPACITOR
	C13	QETC1CM-476	E CAPACITOR
	C14	QCS31HJ-331	CAPACITOR
	C15	QETC1CM-476	E CAPACITOR
	C16	QETC1CM-476	E CAPACITOR
	C17	QCT25CH-390	CAPACITOR
	C20	QCT25CH-5R0	E CAPACITOR
	C23	QCF31HP-223	CAPACITOR
	C24	QETCOJM-337	E CAPACITOR
	C25	QFN31HJ-103	M CAPACITOR
	C26	QFN31HJ-103	M CAPACITOR
	C27	QCT25CH-390	CAPACITOR
	C28	QFP41HF-151	PP CAPACITOR
	C29	QCS31HJ-270	CAPACITOR
	C30	QETC1HM-475	E CAPACITOR
	C31	QCT25CH-560	CAPACITOR
	C32	QFN31HJ-103	M CAPACITOR
	C33	QFN31HJ-103	M CAPACITOR
	C34	QETCOJM-226	E CAPACITOR
	C35	QETC1HM-475	E CAPACITOR
	C36	QETC1HM-225	E CAPACITOR
	C37	QFN31HJ-103	M CAPACITOR
	C38	QETCOJM-476	E CAPACITOR
	C39	QCF31HP-223	CAPACITOR
	C40	QFN31HJ-223	M CAPACITOR
	C41	QCS31HJ-391	CAPACITOR
	C42	QCS31HJ-221	CAPACITOR
	C43	QCS31HJ-221	CAPACITOR
	C44	QFN31HJ-223	M CAPACITOR
	C45	QCF31HP-223	CAPACITOR
	C46	QETC1CM-476	E CAPACITOR
	C47	QFN31HJ-223	M CAPACITOR
	C48	QFN31HJ-223	M CAPACITOR
	C49	QCF31HP-223	CAPACITOR
	C50	QETCOJM-476	E CAPACITOR
	C51	QFN31HJ-103	M CAPACITOR
	C52	QFN31HJ-103	M CAPACITOR
	C53	QETC1HM-104	E CAPACITOR
	C54	QFN31HJ-103	M CAPACITOR
	C55	QFN31HJ-183	M CAPACITOR
	C56	QETC1HM-105	E CAPACITOR
	C57	QFN31HJ-682	M CAPACITOR
	C58	QETC1EM-475	E CAPACITOR
	C59	QCS31HJ-7R0	CAPACITOR
	C60	QETC1HM-105	E CAPACITOR
	C61	QETC1EM-475	E CAPACITOR
	C62	QCS31HJ-150	CAPACITOR
	C63	QCF31HP-102	CAPACITOR
	C64	QCS31HJ-7R0	CAPACITOR
	C65	QFN31HJ-223	M CAPACITOR
	C66	QETCOJM-476	E CAPACITOR
	C67	QCF31HP-223	CAPACITOR
	C68	QCS31HJ-680	CAPACITOR
	C69	QFN31HJ-223	M CAPACITOR
	C70	QCF31HP-223	CAPACITOR
	C71	QETCOJM-476	E CAPACITOR
	C72	QFN31HJ-472	M CAPACITOR
	C73	QFN31HJ-103	M CAPACITOR
	C74	QCS31HJ-470	CAPACITOR
	C75	QFN31HJ-103	M CAPACITOR
	C76	QETC1HM-105	E CAPACITOR
	C77	QCF31HP-222	CAPACITOR
	C78	QFN31HJ-223	M CAPACITOR
	C79	QFN31HJ-223	M CAPACITOR
	C80	QFN31HJ-223	M CAPACITOR
	C81	QFN31HJ-223	M CAPACITOR
	C82	QCF31HP-223	CAPACITOR
	C83	QETCOJM-476	E CAPACITOR
	C84	QRD161J-0R0	RESISTOR
	C85	QFN31HJ-223	M CAPACITOR
	C87	QCF31HP-223	CAPACITOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C88	QETCOJM-476	E CAPACITOR
	C89	QFN31HJ-102	M CAPACITOR
	C90	QEE81CM-225	TANTAL CAPACITOR
	C91	QEE81CM-476	TANTAL CAPACITOR
	C92	QFN31HJ-103	M CAPACITOR
	C93	QFN31HJ-103	M CAPACITOR
	C94	QETCOJM-476	E CAPACITOR
	C95	QFN31HJ-223	M CAPACITOR
	C96	QFN31HJ-223	M CAPACITOR
	C97	QFN31HJ-223	M CAPACITOR
	C98	QFN31HJ-223	M CAPACITOR
	C99	QFN31HJ-223	M CAPACITOR
	C100	QETCOJM-337	E CAPACITOR
	C101	QCF31HP-223	CAPACITOR
	C102	QFN31HJ-223	M CAPACITOR
	C103	QCT25CH-470	CAPACITOR
	L1	PU48530-221J	COIL
	L2	PU48530-221J	COIL
	L4	PU48530-221J	COIL
	L5	PU48530-221J	COIL
	L6	PU48530-181J	COIL
	L7	PU48530-101J	COIL
	L8	PU48530-221J	COIL
	L9	PU48530-221J	COIL
	L10	PU48530-470J	COIL
	L11	PU48530-221J	COIL
	L12	PU48530-221J	COIL
	L13	PU48530-221J	COIL
	L14	PU48530-221J	COIL
	LPF1	PGZ01190	LOW PASS FILTER
	LPF2	PGZ00477	LOW PASS FILTER
	BPF1	PU57072	BAND PASS FILTER
	BPF2	PU54410-2	BAND PASS FILTER
	DL1	PGZ01189	LOW PASS FILTER
△	X1	PU31449-4K	CRYSTAL RESONATOR
	TP1	PU54983	TEST PIN, X17
	CN1	PU58844-4	CONNECTOR
	CN2	PU58844-4R	CONNECTOR
	CN3	PU58844-2	CONNECTOR
	CN4	PU58844-2	CONNECTOR
	CN5	PU58844-2Y	CONNECTOR
	CN9	PU58844-5	CONNECTOR
	CN10	PU58844-2R	CONNECTOR
	CN11	PU58844-2	CONNECTOR
	CN12	PU58844-8	CONNECTOR
	CN13	PU58844-6	CONNECTOR

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* 11. VIDEO (B) BOARD ASSEMBLY <03> *
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	PWBA	PRK10126B	VIDEO B BOARD ASSY, EP ONLY
	IC1	TA7347P	IC
	IC2	AN608P	IC
	IC5	TA7347P	IC
	IC6	LA7324A	IC
	IC7	LC8992	IC
	IC9	LA7332	IC
	IC11	AN607P	IC
	Q5	2SC2647C	TRANSISTOR
	Q6	2SC2647C	TRANSISTOR
	Q7	2SC2647C	TRANSISTOR
	Q8	2SC2647C	TRANSISTOR
	Q9	2SC2647C	TRANSISTOR
	Q11	2SC2647C	TRANSISTOR
	Q12	2SB642(Q)	TRANSISTOR
	Q13	2SB642(Q)	TRANSISTOR
	Q14	2SD638Q	TRANSISTOR
	Q19	2SB642(Q)	TRANSISTOR
	Q20	2SC2647C	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q22	2SC2647C	TRANSISTOR
	Q23	2SC2647C	TRANSISTOR
	Q24	2SC2647C	TRANSISTOR
	Q29	2SC2647C	TRANSISTOR
	Q33	2SC2647C	TRANSISTOR
	Q34	2SB642(Q)	TRANSISTOR
	Q37	DTC144EF	TRANSISTOR
	Q38	DTC114YF	TRANSISTOR
	Q41	2SC2647C	TRANSISTOR
	Q42	2SC2647C	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	RD9.1EB2	ZENER DIODE
	D5	1SS99	DIODE
	D6	1SS133	DIODE
	R2	QRD161J-223	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-102	RESISTOR
	R14	QRD161J-102	RESISTOR
	R15	QRD161J-561	RESISTOR
	R16	QRD161J-102	RESISTOR
	R17	QRD161J-471	RESISTOR
	R18	QRD161J-223	RESISTOR
	R19	QRD161J-103	RESISTOR
	R21	QRD161J-333	RESISTOR
	R22	QRD161J-123	RESISTOR
	R23	QRD161J-152	RESISTOR
	R24	QVZ3513-681	V RESISTOR
	R25	QRD161J-391	RESISTOR
	R26	QRD161J-101	RESISTOR
	R27	QRD161J-333	RESISTOR
	R28	QRD161J-823	RESISTOR
	R29	QRD161J-102	RESISTOR
	R30	QRD161J-222	RESISTOR
	R31	QRD161J-562	RESISTOR
	R32	QRD161J-223	RESISTOR
	R33	QRD161J-102	RESISTOR
	R34	QRD161J-101	RESISTOR
	R35	QRD161J-102	RESISTOR
	R37	QRD161J-0R0	RESISTOR
	R39	QRD161J-102	RESISTOR
	R41	QRD161J-122	RESISTOR
	R42	QRD161J-222	RESISTOR
	R43	QRD161J-221	RESISTOR
	R44	QRD161J-152	RESISTOR
	R45	QRD161J-102	RESISTOR
	R46	QRD161J-472	RESISTOR
	R48	QRD161J-223	RESISTOR
	R49	QRD161J-181	RESISTOR
	R50	QRD161J-331	RESISTOR
	R51	QRD161J-750	RESISTOR
	R61	QRD161J-333	RESISTOR
	R62	QRD161J-333	RESISTOR
	R68	QRD161J-103	RESISTOR
	R70	QRD161J-334	RESISTOR
	R71	QRD161J-562	RESISTOR
	R72	QRD161J-332	RESISTOR
	R73	QRD161J-154	RESISTOR
	R74	QRD161J-334	RESISTOR
	R77	QVZ3513-473	V RESISTOR
	R78	QRD161J-474	RESISTOR
	R79	QRD161J-104	RESISTOR
	R80	QRD161J-472	RESISTOR
	R81	QVZ3513-472	V RESISTOR
	R82	QRD161J-152	RESISTOR
	R83	QRD161J-102	RESISTOR
	R85	QRD161J-681	RESISTOR
	R87	QRD161J-562	RESISTOR
	R88	QRD161J-681	RESISTOR
	R89	QRD161J-561	RESISTOR
	R90	QRD161J-222	RESISTOR
	R91	QRD161J-391	RESISTOR
	R92	QRD161J-391	RESISTOR
	R93	QRD161J-222	RESISTOR
	R94	QRD161J-222	RESISTOR
	R95	QRD161J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R111	QVZ3513-222	V RESISTOR
	R112	QRD161J-102	RESISTOR
	R113	QRD161J-102	RESISTOR
	R114	QRD161J-563	RESISTOR
	R116	QRD161J-472	RESISTOR
	R118	QRD161J-822	RESISTOR
	R120	QRD161J-563	RESISTOR
	R121	QRD161J-102	RESISTOR
	R122	QRD161J-122	RESISTOR
	R123	QRD161J-475	RESISTOR
	R130	QRD161J-331	RESISTOR
	R132	QRD161J-223	RESISTOR
	R134	QRD161J-391	RESISTOR
	R135	QRD161J-392	RESISTOR
	R136	QRD161J-102	RESISTOR
	R137	QRD161J-102	RESISTOR
	R138	QRD161J-103	RESISTOR
	R139	QRD161J-103	RESISTOR
	R140	QRD161J-103	RESISTOR
	R141	QRD161J-102	RESISTOR
	R143	QRD161J-103	RESISTOR
	R145	QRD161J-473	RESISTOR
	R146	QRD161J-103	RESISTOR
	R147	QRD161J-682	RESISTOR
	R151	QRD161J-0R0	RESISTOR
	R152	QRD161J-105	RESISTOR
	R153	QRD161J-113	RESISTOR
	R156	QRD161J-101	RESISTOR
	R157	QRD161J-181	RESISTOR
	R158	QRD161J-472	RESISTOR
	R161	QRD161J-471	RESISTOR
	R162	QRD161J-223	RESISTOR
	R163	QRD161J-223	RESISTOR
	R165	QRD161J-122	RESISTOR
	R167	QRD161J-0R0	RESISTOR
	R168	QRD161J-332	RESISTOR
	R169	QRD161J-103	RESISTOR
	R170	QRD161J-0R0	RESISTOR
	R171	QRD161J-181	RESISTOR
	R200	QRD161J-0R0	RESISTOR
	C1	QETC1AM-476	E CAPACITOR
	C3	QETC1CM-107	E CAPACITOR
	C4	QCF31HP-223	CAPACITOR
	C5	QENC1AM-476	NP E CAPACITOR
	C8	QFN31HK-223	M CAPACITOR
	C10	QFN31HK-223	M CAPACITOR
	C12	QFP41HG-471	PP CAPACITOR
	C13	QFP41HF-181	PP CAPACITOR
	C14	QCS31HJ-270	CAPACITOR
	C15	QCS31HJ-181	CAPACITOR
	C16	QCS31HJ-221	CAPACITOR
	C17	QENC1CM-106	NP E CAPACITOR
	C18	QFN31HK-103	M CAPACITOR
	C19	QCF31HP-223	CAPACITOR
	C20	QETCOJM-107	E CAPACITOR
	C22	QETC1CM-107	E CAPACITOR
	C23	QCF31HP-223	CAPACITOR
	C25	QETC1AM-476	E CAPACITOR
	C26	QENC1AM-476	NP E CAPACITOR
	C27	PU54990-3	E CAPACITOR
	C28	QETC1CM-337	E CAPACITOR
	C41	QCS31HJ-220	CAPACITOR
	C42	QCS31HJ-330	CAPACITOR
	C43	QCS31HJ-330	CAPACITOR
	C44	QCS31HJ-680	CAPACITOR
	C45	QCS31HJ-101	CAPACITOR
	C46	QENC1HM-474	E CAPACITOR
	C48	QETC1HM-224	E CAPACITOR
	C49	QETC1EM-335	E CAPACITOR
	C50	QFN31HK-223	M CAPACITOR
	C52	QETC1HM-225	E CAPACITOR
	C53	QCF31HP-223	CAPACITOR
	C54	QETCOJM-107	E CAPACITOR
	C56	QFN31HK-223	M CAPACITOR
	C57	QCF31HP-103	CAPACITOR
	C58	QFN31HK-683	M CAPACITOR
	C59	QCS31HJ-560	CAPACITOR
	C60	QCS31HJ-330	CAPACITOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C61	QCS31HJ-4R0	CAPACITOR
	C62	QFN31HK-223	M CAPACITOR
	C63	QCF31HP-223	CAPACITOR
	C64	QETC1AM-476	E CAPACITOR
	C65	QETC1HM-105	E CAPACITOR
	C66	QCF31HP-103	CAPACITOR
	C67	QFN31HK-103	M CAPACITOR
	C68	QFN31HK-223	M CAPACITOR
	C69	QETC1HM-105	E CAPACITOR
	C70	QCF31HP-102	CAPACITOR
	C71	QETC0JM-476	E CAPACITOR
	C72	QCF31HP-223	CAPACITOR
	C73	QCS31HJ-471	CAPACITOR
	C74	QCS31HJ-390	CAPACITOR
	C75	QFN31HK-223	M CAPACITOR
	C77	QCS31HJ-330	CAPACITOR
	C78	QCS31HJ-270	CAPACITOR
	C79	QCS31HJ-681	CAPACITOR
	C91	QCS31HJ-101	CAPACITOR
	C92	QCF31HP-223	CAPACITOR
	C93	QETC0JM-337	E CAPACITOR
	C95	QCS31HJ-101	CAPACITOR
	C96	QCS31HJ-390	CAPACITOR
	C97	QETC1HM-105	E CAPACITOR
	C98	QFN31HK-103	M CAPACITOR
	C99	QFN31HK-223	M CAPACITOR
	C100	QFN31HK-223	M CAPACITOR
	C101	QFN31HK-223	M CAPACITOR
	C102	QFN31HK-103	M CAPACITOR
	C103	QETC1HM-105	E CAPACITOR
	C104	QETC1HM-105	E CAPACITOR
	C105	QFN31HK-223	M CAPACITOR
	C106	QETC1HM-105	E CAPACITOR
	C107	QFN31HK-473	M CAPACITOR
	C108	QFN31HK-223	M CAPACITOR
	C109	QFN31HK-223	M CAPACITOR
	C110	QFN31HK-223	M CAPACITOR
	C111	QCS31HJ-221	CAPACITOR
	C112	QFN31HK-473	M CAPACITOR
	C113	QCF31HP-223	CAPACITOR
	C114	QETC1CM-336	E CAPACITOR
	C115	QETC0JM-476	E CAPACITOR
	C117	QETC0JM-337	E CAPACITOR
	C118	QETC1CM-476	E CAPACITOR
	C119	QETC0JM-337	E CAPACITOR
	C120	QENC1CM-106	NP E CAPACITOR
	C121	QCS31HJ-221	CAPACITOR
	C123	QFN31HK-563	M CAPACITOR
	C124	QFN31HK-223	M CAPACITOR
	C125	QCS31HJ-101	CAPACITOR
	C127	QCS31HJ-330	CAPACITOR
	C128	QCF31HP-223	CAPACITOR
	C132	QCS31HJ-180	CAPACITOR
	C135	QFN31HK-103	M CAPACITOR
	C138	QCS31HJ-270	CAPACITOR
	L1	PU48530-221J	COIL
	L4	PU48530-5R6J	COIL
	L5	PU48530-470J	COIL
	L6	PU48530-221J	COIL
	L7	PU48530-221J	COIL
	L12	PU48530-221J	COIL
	L13	PU48530-560J	COIL
	L14	PU48530-330J	COIL
	L15	PU48530-221J	COIL
	L16	PU48530-121J	COIL
	L17	PU48530-270J	COIL
	L19	PU48530-470J	COIL
	L20	PU48530-560J	COIL
	L21	PU48530-221J	COIL
	L22	PU48530-3R3K	COIL
	L23	PU48530-180J	COIL
	L24	PU48530-221J	COIL
	L25	PU48530-100J	COIL
	L26	PU48530-271J	COIL
	L27	PU48530-221J	COIL
	L28	PU48530-220J	COIL
	L29	PU48530-150J	COIL
	L30	PU48530-150J	COIL
	L32	PU48530-270J	COIL

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	EQ1	PU58315-2S	EQUALIZER
		OR PU58315-S	EQUALIZER
		OR PU58315	EQUALIZER
	LPF1	PGZ01820	LOW PASS FILTER
	LPF2	PU60871-2	LOW PASS FILTER
	BPF1	PU57072	BAND PASS FILTER
	BPF2	PGZ01819	BAND PASS FILTER
	DL3	PU58971-3	COMB FILTER
△	X1	PGZ01818	CRYSTAL RESONATOR
△	TH1	PU5210B-101K	POSITIVE THERMISTOR
△	TH2	PU5210B-330K	POSITIVE THERMISTOR
	TP1	PU54983	TEST PIN, X12
	CN2	PU58844-5	CONNECTOR
	CN6	PU58844-2R	CONNECTOR
	CN7	PU58844-4R	CONNECTOR
	CN8	PU58844-4Y	CONNECTOR

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* 12. SYSCON BOARD ASSEMBLY <04> *
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PWBA	PRK10071B	SYSCON ASSY, E/EP
	PRK10071C	SYSCON ASSY, ED
SPC1	PGZ01650	SPACER BUSH, X2
SPC2	PGZ01649-02	SPACER, X2

-SYSCON BOARD ASSEMBLY <04>-

PWBA	PRK10071A1	SYSCON BOARD ASSY
IC1	HD6303YP	IC
	OR HD63C03YP	IC
	OR HD63B03YP	IC
	OR HD63A03YP	IC
IC2	UPD6345C	IC
IC3	TC4021BP	IC
IC4	TC4052BP	IC
IC5	M51957BL	IC
IC6	UPC393C	IC
IC7	TC4069UBP	IC
IC8	M54519P	IC
IC9	TC74HC73AP	IC
D1	1SS133	DIODE
D2	1SS133	DIODE
D3	1SS133	DIODE
D4	1SS133	DIODE
D5	1SS133	DIODE
D6	1SS133	DIODE
D7	1SS133	DIODE
D8	1SS133	DIODE
R1	QRD161J-102	RESISTOR
R2	QRD161J-102	RESISTOR
R3	QRD161J-103	RESISTOR
R4	QRD161J-104	RESISTOR
R5	QRD161J-101	RESISTOR
R6	QRD161J-101	RESISTOR
R7	QRD161J-101	RESISTOR
R8	QRD161J-101	RESISTOR
R9	QRD161J-101	RESISTOR
R10	QRD161J-101	RESISTOR
R11	QRD161J-101	RESISTOR
R12	QRD161J-101	RESISTOR
R13	QRD161J-101	RESISTOR
R14	QRD161J-102	RESISTOR
R15	QRD161J-102	RESISTOR
R16	QRD161J-102	RESISTOR
R17	QRD161J-102	RESISTOR
R18	QRD161J-102	RESISTOR
R19	QRD161J-102	RESISTOR
R20	QRD161J-102	RESISTOR
R21	QRD161J-102	RESISTOR
R22	QRD161J-102	RESISTOR
R23	QRD161J-102	RESISTOR
R24	QRD161J-102	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-102	RESISTOR
	R27	QRD161J-102	RESISTOR
	R28	QRD161J-103	RESISTOR
	R29	QRD161J-333	RESISTOR
	R30	QRD161J-103	RESISTOR
	R31	QRD161J-102	RESISTOR
	R32	QRD161J-102	RESISTOR
	R33	QRD161J-102	RESISTOR
	R34	QRD161J-102	RESISTOR
	R35	QRD161J-333	RESISTOR
	R36	QRD161J-333	RESISTOR
	R37	QRD161J-102	RESISTOR
	R38	QRD161J-102	RESISTOR
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-103	RESISTOR
	R41	QRD161J-103	RESISTOR
	R42	QRD161J-102	RESISTOR
	R43	QRD161J-104	RESISTOR
	R44	QRD161J-104	RESISTOR
	R45	QRD161J-104	RESISTOR
	R46	QRD161J-103	RESISTOR
	R47	QRD161J-104	RESISTOR
	R48	QRD161J-103	RESISTOR
	R49	QRD161J-102	RESISTOR
	R50	QRD161J-222	RESISTOR
	R51	QRD161J-103	RESISTOR
	R52	QRD161J-103	RESISTOR
	R53	QRD161J-103	RESISTOR
	R54	QRD161J-562	RESISTOR
	R55	QRD161J-104	RESISTOR
	R56	QRD161J-103	RESISTOR
	R57	QRD161J-104	RESISTOR
	R58	QRD161J-103	RESISTOR
	R59	QRD161J-102	RESISTOR
	R60	QRD161J-103	RESISTOR
	R61	QRD161J-103	RESISTOR
	R62	QRD161J-103	RESISTOR
	R63	QRD161J-333	RESISTOR
	R64	QRD161J-333	RESISTOR
	R65	QRD161J-102	RESISTOR
	R66	QRD161J-103	RESISTOR
	R67	QRD161J-273	RESISTOR
	R68	QRD161J-103	RESISTOR
	R69	QRD161J-333	RESISTOR
	R70	QRD161J-333	RESISTOR
	R71	QRD161J-102	RESISTOR
	R72	QRD161J-102	RESISTOR
	R73	QRD161J-102	RESISTOR
	R74	QRD161J-102	RESISTOR
	R75	QRD161J-102	RESISTOR
	R76	QRD161J-102	RESISTOR
	R77	QRD161J-102	RESISTOR
	R78	QRD161J-102	RESISTOR
	R79	QRD161J-102	RESISTOR
	R80	QRD161J-102	RESISTOR
	RB1	QRD161J-104	RESISTOR
	RB2	QRD161J-101	RESISTOR
	RB3	QRD161J-101	RESISTOR
	RB4	QRD161J-102	RESISTOR
	RB5	QRD161J-103	RESISTOR
	RB6	QRD161J-102	RESISTOR
	RB7	QRD161J-102	RESISTOR
	RA1	EXB-P84103M	RESISTOR ARRAY
	RA2	EXB-P88103M	NETWORK RESISTOR
	C1	QCS31HJ-330	CAPACITOR
	C2	QCS31HJ-330	CAPACITOR
	C3	QCF31HP-223	CAPACITOR
	C4	QCF31HP-223	CAPACITOR
	C5	QCF31HP-223	CAPACITOR
	C6	QCF31HP-223	CAPACITOR
	C7	QCF31HP-223	CAPACITOR
	C8	QCF31HP-103	CAPACITOR
	C9	QCF31HP-103	CAPACITOR
	C10	QCF31HP-103	CAPACITOR
	C11	QCF31HP-103	CAPACITOR
	C12	QCF31HP-103	CAPACITOR
	C13	QCF31HP-103	CAPACITOR
	C14	QCF31HP-103	CAPACITOR
	C15	QCS31HJ-560	CAPACITOR
	C16	QCF31HP-103	CAPACITOR
	C17	QCF31HP-222	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C18	QCF31HP-102	CAPACITOR
	C19	QCF31HP-223	CAPACITOR
	C20	QCF31HP-102	CAPACITOR
	C21	QCF31HP-103	CAPACITOR
	C22	QETC1CM-107	E CAPACITOR
	C23	QETC1HM-104	E CAPACITOR
	C24	QETC1HM-224	E CAPACITOR
	C25	QETC1HM-224	E CAPACITOR
	C28	QCF31HP-223	CAPACITOR
	L1	PGZ00617-221	COIL
⚠	X1	PGZ00157	CRYSTAL RESONATOR
	RY1	PU56539	DC RELAY
	GND1	PU54983	TEST PIN
	CN1	PGZ00506-44	MALE CONNECTOR
	CN2	PU58844-3R	CONNECTOR
	CN3	PU58844-9R	CONNECTOR
	CN5	PU58844-3	CONNECTOR
	CN6	PU58844-7	CONNECTOR
	CN7	PU58844-4R	CONNECTOR
	CN8	PU58844-10	CONNECTOR
	CN9	PU58844-10Y	CONNECTOR
	CN10	PU58844-4	CONNECTOR
	CN11	PU58844-9	CONNECTOR
	CN12	PU58844-3Y	CONNECTOR
		-P-ROM & SWITCH BOARD ASSEMBLY <12>-	
	PWBA	PRK10071B2	R-ROM&SW BOARD ASSY, E/EP
		PRK10071C2	R-ROM&SW BOARD ASSY, ED
	IC1	PGD30240-13-02	IC
	OR	PGD30240B-13-02	IC
	OR	PGD30240C-13-02	IC
	IC2	TC4021BP	IC
	IC3	TC4021BP	IC
	IC4	TC4021BP	IC
	RA1	EXB-P88103M	NETWORK RESISTOR
	RA2	EXB-P88103M	NETWORK RESISTOR
	RA3	EXB-P88103M	NETWORK RESISTOR
	C1	QCF31HP-223	CAPACITOR
	C2	QCF31HP-223	CAPACITOR
	C3	QCF31HP-223	CAPACITOR
	C4	QCF31HP-223	CAPACITOR
	C5	QCF31HP-103	CAPACITOR
	C6	QCF31HP-103	CAPACITOR
	C7	QCF31HP-103	CAPACITOR
	C8	QCF31HP-103	CAPACITOR
	C9	QCF31HP-103	CAPACITOR
	C10	QCF31HP-103	CAPACITOR
	C11	QCF31HP-103	CAPACITOR
	C12	QCF31HP-103	CAPACITOR
	C13	QCF31HP-103	CAPACITOR
	C14	QCF31HP-103	CAPACITOR
	C15	QCF31HP-103	CAPACITOR
	C16	QCF31HP-103	CAPACITOR
	C17	QCF31HP-103	CAPACITOR
	C18	QCF31HP-103	CAPACITOR
	C19	QCF31HP-103	CAPACITOR
	C20	QCF31HP-103	CAPACITOR
	C21	QCF31HP-103	CAPACITOR
	C22	QCF31HP-103	CAPACITOR
	C23	QCF31HP-103	CAPACITOR
	C24	QCF31HP-103	CAPACITOR
	C25	QCF31HP-103	CAPACITOR
	C26	QCF31HP-103	CAPACITOR
	C27	QCF31HP-103	CAPACITOR
	C28	QCF31HP-103	CAPACITOR
	C29	QCF31HP-102	CAPACITOR
	SW1	QSS1K81-L01	DIP SW
	SW2	PGZ01294	SLIDE SWITCH
	SW3	QSS1K71-L01	DIP SW
	SW4	QSR0095-L01	DIP SW
	SW5	QSR0095-L01	DIP SW
	SKT1	PGZ00331-028	IC SOCKET
	CN1	PGZ00421-44	MALE CONNECTOR

<05>

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
			**********
			* 13. VIDEO PRE/REC BOARD ASSEMBLY <05> *
			**********
	PWBA	PRK20100C	VIDEO PRE/REC BOARD ASSY, E/ED
		PRK20100F	VIDEO PRE/REC BOARD ASSY, EP
	IC1	AN6392	IC
	IC2	AN6392	IC
	IC3	AN6350	IC
	IC4	AN607P	IC
	Q1	2SC2647C	TRANSISTOR
	Q2	2SC2647C	TRANSISTOR
	Q3	2SC2647C	TRANSISTOR
	Q4	2SC2647C	TRANSISTOR
	Q5	2SB642(Q)	TRANSISTOR
	Q6	2SB642(Q)	TRANSISTOR
	Q7	DTA144EF	TRANSISTOR
	Q8	2SB642(Q)	TRANSISTOR
	Q9	2SC941Y	TRANSISTOR
	Q10	2SC941Y	TRANSISTOR
	Q11	2SC2647C	TRANSISTOR
	Q12	2SC2647C	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D4	1SS133	DIODE
	D5	1SS133	DIODE
	D6	RD5.1EB2	ZENER DIODE
	D7	RD5.1EB2	ZENER DIODE
	R1	QRD161J-392	RESISTOR, E/ED
		QRD161J-682	RESISTOR, EP
	R2	PU55509-102	V RESISTOR, E/ED
		PU55509-222	V RESISTOR, EP
	R3	PU55509-102	V RESISTOR, E/ED
		PU55509-222	V RESISTOR, EP
	R4	QRD161J-151	RESISTOR, E/ED
		QRD161J-221	RESISTOR, EP
	R5	PU55509-472	V RESISTOR
	R6	PU55509-472	V RESISTOR
	R7	QRD161J-183	RESISTOR
	R8	QRD161J-183	RESISTOR
	R9	QRD161J-222	RESISTOR
	R10	QRD161J-183	RESISTOR
	R11	QRD161J-183	RESISTOR
	R12	QRD161J-222	RESISTOR
	R13	QRD161J-183	RESISTOR
	R14	QRD161J-183	RESISTOR
	R15	QRD161J-222	RESISTOR
	R16	QRD161J-183	RESISTOR
	R17	QRD161J-183	RESISTOR
	R18	QRD161J-222	RESISTOR
	R19	QRD161J-821	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-821	RESISTOR
	R22	QRD161J-102	RESISTOR
	R23	QRD161J-221	RESISTOR
	R24	QRD161J-681	RESISTOR
	R25	QRD161J-470	RESISTOR
	R26	QRD161J-151	RESISTOR
	R27	QRD161J-393	RESISTOR
	R28	QRD161J-561	RESISTOR
	R29	QRD161J-222	RESISTOR
	R30	QRD161J-222	RESISTOR
	R31	QRD161J-221	RESISTOR
	R32	QRD161J-681	RESISTOR
	R33	QRD161J-470	RESISTOR
	R34	QRD161J-151	RESISTOR
	R35	QRD161J-393	RESISTOR
	R36	QRD161J-561	RESISTOR
	R37	QRD161J-390	RESISTOR
	R38	QRD161J-390	RESISTOR
	R39	QRD161J-3R9	RESISTOR
	R40	QRD161J-3R9	RESISTOR
	R41	QRD161J-103	RESISTOR
	R42	QRD161J-103	RESISTOR
	R43	QRD161J-103	RESISTOR
	R44	QRD161J-103	RESISTOR
	R45	QRD161J-103	RESISTOR
	R46	QRD161J-273	RESISTOR
	R47	PU55509-102	V RESISTOR
	R48	QRD161J-471	RESISTOR
	R49	QRD161J-822	RESISTOR
	R50	QRD161J-122	RESISTOR
	R51	QRD161J-822	RESISTOR
	R52	PU55509-472	V RESISTOR
	R53	QRD161J-682	RESISTOR
	R54	QRD161J-822	RESISTOR
	R55	QRD161J-471	RESISTOR
	R56	PU55509-102	V RESISTOR
	R57	QRD161J-273	RESISTOR
	R58	QRD161J-223	RESISTOR
	R59	QRD161J-223	RESISTOR
	R60	QRD161J-222	RESISTOR
	R61	QRD161J-103	RESISTOR
	R62	QRD161J-183	RESISTOR
	R63	QRD161J-102	RESISTOR
	R64	QRD161J-181	RESISTOR
	R65	QRD161J-102	RESISTOR
	R66	PU55509-102	V RESISTOR
	R67	QRD161J-471	RESISTOR
	R68	QRD161J-332	RESISTOR
	C1	QETC1CM-476	E CAPACITOR
	C2	QETC1CM-476	E CAPACITOR
	C3	QCF31HP-223	CAPACITOR
	C4	QFN31HJ-223	M CAPACITOR
	C5	QFN31HJ-223	M CAPACITOR
	C6	QFN31HJ-223	M CAPACITOR
	C7	QFN31HJ-223	M CAPACITOR
	C8	QFN31HJ-223	M CAPACITOR
	C9	QFN31HJ-223	M CAPACITOR
	C10	QFN31HJ-103	M CAPACITOR
	C11	QCS31HJ-680	CAPACITOR
	C12	QFN31HJ-103	M CAPACITOR
	C13	QER61HM-105	E CAPACITOR
	C14	QCF31HP-103	CAPACITOR
	C15	QER61HM-225	E CAPACITOR
	C16	QER61CM-476	E CAPACITOR
	C17	QCF31HP-223	CAPACITOR
	C18	QFN31HJ-103	M CAPACITOR
	C19	QCS31HJ-680	CAPACITOR
	C20	QFN31HJ-103	M CAPACITOR
	C21	QETC1HM-105	E CAPACITOR
	C22	QCF31HP-103	CAPACITOR
	C23	QETC1HM-225	E CAPACITOR
	C24	QETC1CM-476	E CAPACITOR
	C25	QCF31HP-223	CAPACITOR
	C26	QCF31HP-223	CAPACITOR
	C29	QFN31HJ-223	M CAPACITOR
	C30	QCS31HJ-560	CAPACITOR
	C31	QFN31HJ-223	M CAPACITOR
	C32	QFN31HJ-223	M CAPACITOR
	C33	QCS31HJ-560	CAPACITOR
	C34	QFN31HJ-223	M CAPACITOR
	C35	QCF31HP-223	CAPACITOR
	C36	QER61CM-476	E CAPACITOR
	C37	QER61HM-105	E CAPACITOR
	C38	QFN31HJ-223	M CAPACITOR
	C39	QFN31HJ-223	M CAPACITOR
	C40	QER61HM-105	E CAPACITOR
	C41	QCF31HP-223	CAPACITOR
	C42	QER61CM-476	E CAPACITOR
	C43	QCS31HJ-331	CAPACITOR
	C44	QETC1CM-476	E CAPACITOR
	C45	QCF31HP-223	CAPACITOR
	C46	QETC1HM-105	E CAPACITOR
	C47	QFN31HJ-223	M CAPACITOR
	C48	QFN31HJ-223	M CAPACITOR
	C49	QCF31HP-223	CAPACITOR
	C50	QCS31HJ-220	CAPACITOR
	L1	PU48530-221J	COIL
	L2	PU48530-221J	COIL
	L3	PU48530-6R8K	COIL
	L4	PU48530-221J	COIL
	L5	PU48530-6R8K	COIL
	L6	PU48530-221J	COIL
	L7	PU48530-150J	COIL
	L8	PU48530-150J	COIL
	L9	PU48530-221J	COIL

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	LPF1	PU50747	LOW PASS FILTER
	RY1	PU55260	RELAY
	BKT1	P042326	BOARD BRACKET
	BKT2	PRD42978	BOARD BRACKET
	CL1	PU49485-3	WIRE CLAMP
	RV1	PU53276	PLASTIC RIVET, X4(EP)
	SCW1	DPSP2608Z	SCREW, X3
	SLD1	PRS30035	SHIELD PLATE, EP
	TP	PU54983	TEST PIN, X9
	TP1	PU54983	TEST PIN, X9
	CN1	PU56258-10	CONNECTOR
	CN2	PU58844-8	CONNECTOR
	CN3	PU58844-4	CONNECTOR
△	CP1	ICP-F10	CIRCUIT PROTECTOR

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* 14. SERVO BOARD ASSEMBLY <06> *
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	PWBA	PRK20103B-01	SERVO BOARD ASSY
	IC1	HD49722NT	IC
	IC2	M54647L	IC
	IC3	M54647L	IC
	IC4	TA8405S	IC
	IC5	UPD75P402CT-101	IC
	OR	UPD75402ACT-254	IC
	IC6	M6MB8011AP	IC
	IC7	M51957BL	IC
	IC8	UPD6345C	IC
	IC9	UPD6345C	IC
	IC10	TC4021BP	IC
	IC11	TC4027BP	IC
	Q3	2SB793AR	TRANSISTOR
	Q4	2SB793AR	TRANSISTOR
	Q5	DTC144EF	TRANSISTOR
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	D6	1SS133	DIODE
	D7	1SS136	DIODE
	D8	1SS133	DIODE
	R1	QRD161J-222	RESISTOR
	R2	QRD161J-393	RESISTOR
	R3	QRD161J-564	RESISTOR
	R4	QRD161J-123	RESISTOR
	R5	QRD161J-273	RESISTOR
	R6	QRD161J-105	RESISTOR
	R7	QRD161J-683	RESISTOR
	R8	QRD161J-683	RESISTOR
	R9	QRD161J-105	RESISTOR
	R10	QRD161J-394	RESISTOR
	R11	QRD161J-222	RESISTOR
	R12	QRD161J-104	RESISTOR
	R13	QRD161J-105	RESISTOR
	R14	QRD161J-273	RESISTOR
	R15	QRD161J-224	RESISTOR
	R16	QVPC610-334	V RESISTOR
	R17	QRD161J-104	RESISTOR
	R18	QVPC610-224	V RESISTOR
	R19	QRD161J-682	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-105	RESISTOR
	R22	QRD161J-223	RESISTOR
	R23	QRD161J-153	RESISTOR
	R24	QRD161J-102	RESISTOR
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-102	RESISTOR
	R27	QRD161J-102	RESISTOR
	R28	QRD161J-102	RESISTOR
	R29	QRD161J-331	RESISTOR

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R30	QRD161J-153	RESISTOR
	R31	QRD161J-103	RESISTOR
	R32	QRD161J-331	RESISTOR
	R33	QRD161J-822	RESISTOR
	R34	QRD161J-272	RESISTOR
	R35	QRD161J-103	RESISTOR
	R36	QRD161J-103	RESISTOR
	R37	QRD161J-102	RESISTOR
	R38	QRD161J-102	RESISTOR
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-223	RESISTOR
	R41	QRD161J-103	RESISTOR
	R42	QRD161J-124	RESISTOR
	R43	QRD161J-333	RESISTOR
	R44	QRD161J-124	RESISTOR
	R45	QRD161J-102	RESISTOR
	R46	QRD161J-103	RESISTOR
	R50	QRD161J-102	RESISTOR
	R51	QRD161J-102	RESISTOR
	R52	QRD161J-102	RESISTOR
	R53	QRD161J-102	RESISTOR
	R54	QRD161J-102	RESISTOR
	R55	QRD161J-102	RESISTOR
	R56	QRD161J-101	RESISTOR
	R57	QRD161J-101	RESISTOR
	R58	QRD161J-101	RESISTOR
	R59	QRD161J-101	RESISTOR
	R60	QRD161J-101	RESISTOR
	R61	QRD161J-101	RESISTOR
	R62	QRD161J-102	RESISTOR
	R63	QRD161J-101	RESISTOR
	R64	QRD161J-103	RESISTOR
	R65	QRD161J-103	RESISTOR
	R66	QRD161J-103	RESISTOR
	R67	QRD161J-101	RESISTOR
	R69	QRD161J-102	RESISTOR
	R70	QRD161J-473	RESISTOR
	R71	QRD161J-472	RESISTOR
	R72	QRD161J-222	RESISTOR
	RA1	EXB-P87103M	RESISTOR ARRAY
	C1	QFN31HJ-682	M CAPACITOR
	C2	QFV71HJ-474	TF CAPACITOR
	C3	QETC1HM-475	E CAPACITOR
	C4	QETC1HM-475	E CAPACITOR
	C5	QETC1CM-106	E CAPACITOR
	C6	QETC1CM-106	E CAPACITOR
	C7	QENC1HM-105	NP E CAPACITOR
	C8	QFV71HJ-104	TF CAPACITOR
	C9	QCS31HJ-101	CAPACITOR
	C10	QFN31HJ-822	M CAPACITOR
	C11	QFN31HJ-683	M CAPACITOR
	C12	QETC1AM-226	E CAPACITOR
	C13	QCS31HJ-101	CAPACITOR
	C14	QETC1HM-225	E CAPACITOR
	C15	QCS31HJ-101	CAPACITOR
	C16	QETC1AM-226	E CAPACITOR
	C17	QCS31HJ-470	CAPACITOR
	C18	QETC1HM-105	E CAPACITOR
	C19	QETC1HM-105	E CAPACITOR
	C20	QCS31HJ-220	CAPACITOR
	C21	QCS31HJ-470	CAPACITOR
	C22	QCS31HJ-470	CAPACITOR
	C23	QER61EM-335	E CAPACITOR
	C24	QCS31HJ-330	CAPACITOR
	C25	QCS31HJ-330	CAPACITOR
	C26	QER61AM-476	E CAPACITOR
	C27	QCF31HP-223	CAPACITOR
	C28	QER61AM-476	E CAPACITOR
	C29	QCF31HP-223	CAPACITOR
	C30	QETC1EM-476	E CAPACITOR
	C31	QETC1EM-476	E CAPACITOR
	C32	QETC1HM-105	E CAPACITOR
	C33	QETC1CM-336	E CAPACITOR
	C34	QETC1EM-476	E CAPACITOR
	C38	QCF31HP-102	CAPACITOR
	C39	QCF31HP-103	CAPACITOR
	C40	QCF31HP-102	CAPACITOR
	C41	QETC1EM-476	E CAPACITOR
	C42	QCS31HJ-221	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C43	QCS31HJ-270	CAPACITOR
	C44	QCS31HJ-561	CAPACITOR
	C45	QCF11HP-103	CAPACITOR
	C46	QCS31HJ-561	CAPACITOR
	C47	QCF31HP-223	CAPACITOR
	L1	PU48530-221J	COIL
⚠	X1	PGZ00186	CRYSTAL RESONATOR
⚠	X2	PGZ00142	CERAMIC FILTER
	HS1	PRD43669	HEAT SINK
	SCW1	SBST3005Z	SCREW, X2
	SCW2	SBST3008Z	SCREW
	SCW3	DPSP2606Z	SCREW, X2
	SCW4	SDSF3008Z	SCREW, X2
	SLD1	PRS30029	SHIELD PLATE(S)
	SPC1	PGD40329-02	INSULATOR
	TP1	PU54983	TEST PIN, X11
	CN1	PGZ00421-64	MALE CONNECTOR
	CN2	PU58844-102	CONNECTOR
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR
⚠	CP2	ICP-F20	CIRCUIT PROTECTOR
⚠	CP3	ICP-F10	CIRCUIT PROTECTOR

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* 15. NORMAL AUDIO BOARD ASSEMBLY <07> *
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	PWBA	PRK20101B	NORMAL AUDIO BOARD ASSY
	IC1	BA7765AS	IC
	OR	XRA7763AS	IC
	IC2	BA7765AS	IC
	OR	XRA7765AS	IC
	IC3	CXA1101P	IC
	IC4	M5218AL	IC
	IC5	M5218AL	IC
	IC6	M5218AL	IC
	Q1	DTA124EK	TRANSISTOR
	Q2	DTA124EK	TRANSISTOR
	Q3	DTA124EK	TRANSISTOR
	Q4	DTA124EK	TRANSISTOR
	Q9	DTC124EK	TRANSISTOR
	Q10	DTC124EK	TRANSISTOR
	Q15	2SD973AR	TRANSISTOR
	Q16	DTA124EF	TRANSISTOR
	Q17	DTA124EF	TRANSISTOR
	Q19	2SC3311A(RS)	TRANSISTOR
	Q20	2SC3311A(RS)	TRANSISTOR
	Q21	DTA124EK	TRANSISTOR
	D7	1SS133	DIODE
	D8	1SS133	DIODE
	D9	1SS133	DIODE
	D10	1SS133	DIODE
	D11	1SS133	DIODE
	D12	1SS133	DIODE
	D13	1SS133	DIODE
	D14	1SS133	DIODE
	R1	QVPC610-103	V RESISTOR
	R2	QVPC610-103	V RESISTOR
	R3	QVPC610-102	V RESISTOR
	R4	QVPC610-102	V RESISTOR
	R5	QVPC610-103	V RESISTOR
	R6	QVPC610-103	V RESISTOR
	R7	QVPC610-103	V RESISTOR
	R8	QVPC610-103	V RESISTOR
	R9	QVPC610-101	V RESISTOR
	R10	QVPC610-101	V RESISTOR
	R11	QVPC610-473	V RESISTOR
	R12	QVPC610-473	V RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R15	QRSA08J-0R0Y	RESISTOR
	R16	QRSA08J-0R0Y	RESISTOR
	R17	QRSA08J-104YN	RESISTOR
	R18	QRSA08J-104YN	RESISTOR
	R19	QRSA08J-104YN	RESISTOR
	R20	QRSA08J-104YN	RESISTOR
	R21	QRSA08J-273YN	RESISTOR
	R22	QRSA08J-273YN	RESISTOR
	R23	QRSA08J-221YN	RESISTOR
	R24	QRSA08J-221YN	RESISTOR
	R25	QRSA08J-274YN	RESISTOR
	R26	QRSA08J-274YN	RESISTOR
	R27	QRSA08J-113YN	RESISTOR
	R28	QRSA08J-113YN	RESISTOR
	R29	QRSA08J-123YN	RESISTOR
	R30	QRSA08J-123YN	RESISTOR
	R31	QRSA08J-392YN	RESISTOR
	R32	QRSA08J-392YN	RESISTOR
	R33	QRSA08J-393YN	RESISTOR
	R34	QRSA08J-393YN	RESISTOR
	R35	QRSA08J-103YN	RESISTOR
	R36	QRSA08J-103YN	RESISTOR
	R37	QRSA08J-105YN	RESISTOR
	R38	QRSA08J-105YN	RESISTOR
	R39	QRSA08J-562YN	RESISTOR
	R40	QRSA08J-562YN	RESISTOR
	R41	QRSA08J-334YN	RESISTOR
	R42	QRSA08J-334YN	RESISTOR
	R43	QRSA08J-104YN	RESISTOR
	R44	QRSA08J-104YN	RESISTOR
	R45	QRSA08J-333YN	RESISTOR
	R46	QRSA08J-333YN	RESISTOR
	R47	QRSA08J-103YN	RESISTOR
	R48	QRSA08J-103YN	RESISTOR
	R49	QRSA08J-103YN	RESISTOR
	R50	QRSA08J-103YN	RESISTOR
	R51	QRSA08J-273YN	RESISTOR
	R52	QRSA08J-273YN	RESISTOR
	R53	QRSA08J-821YN	RESISTOR
	R54	QRSA08J-821YN	RESISTOR
	R63	QRSA08J-472YN	RESISTOR
	R64	QRSA08J-472YN	RESISTOR
	R67	QRSA08J-102YN	RESISTOR
	R68	QRSA08J-102YN	RESISTOR
	R69	QRSA08J-392YN	RESISTOR
	R70	QRSA08J-392YN	RESISTOR
	R71	NRVA62D-241N	RESISTOR
	R72	NRVA62D-241N	RESISTOR
	R73	NRVA62D-392N	RESISTOR
	R74	NRVA62D-392N	RESISTOR
	R75	NRVA62D-241N	RESISTOR
	R76	NRVA62D-241N	RESISTOR
	R77	NRVA62D-682N	RESISTOR
	R78	NRVA62D-682N	RESISTOR
	R79	QRSA08J-332YN	RESISTOR
	R80	QRSA08J-332YN	RESISTOR
	R81	QRSA08J-562YN	RESISTOR
	R82	QRSA08J-562YN	RESISTOR
	R87	QRSA08J-223YN	RESISTOR
	R88	QRSA08J-223YN	RESISTOR
	R89	QRSA08J-124YN	RESISTOR
	R90	QRSA08J-124YN	RESISTOR
	R91	QRSA08J-124YN	RESISTOR
	R92	QRSA08J-124YN	RESISTOR
	R93	QRSA08J-124YN	RESISTOR
	R94	QRSA08J-124YN	RESISTOR
	R95	QRSA08J-0R0Y	RESISTOR
	R96	QRSA08J-0R0Y	RESISTOR
	R97	QRSA08J-681YN	RESISTOR
	R98	QRSA08J-681YN	RESISTOR
	R99	QRSA08J-562YN	RESISTOR
	R100	QRSA08J-562YN	RESISTOR
	R101	QRSA08J-124YN	RESISTOR
	R102	QRSA08J-124YN	RESISTOR
	R103	QRSA08J-124YN	RESISTOR
	R104	QRSA08J-124YN	RESISTOR
	R105	QRSA08J-102YN	RESISTOR
	R106	QRSA08J-102YN	RESISTOR
	R107	QRSA08J-104YN	RESISTOR
	R108	QRV141F-4302A	RESISTOR
	R109	QRSA08J-103YN	RESISTOR
	R110	QRSA08J-103YN	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R125	QRSA08J-393YN	RESISTOR
	R126	QRD161J-3R9	RESISTOR
	R127	QRSA08J-223YN	RESISTOR
	R128	QRD161J-6R8	RESISTOR
	R129	QRD161J-680	RESISTOR
	R130	QRD161J-470	RESISTOR
	R133	QRSA08J-821YN	RESISTOR
	R136	QRSA08J-101YN	RESISTOR
	R137	QRSA08J-101YN	RESISTOR
	C1	QER61EM-475	E CAPACITOR
	C2	QER61EM-475	E CAPACITOR
	C3	QER61EM-475	E CAPACITOR
	C4	QER61EM-475	E CAPACITOR
	C5	QER61EM-475	E CAPACITOR
	C6	QER61EM-475	E CAPACITOR
	C7	QCSA1HJ-821	CAPACITOR
	C8	QCSA1HJ-821	CAPACITOR
	C11	QER61HM-105	E CAPACITOR
	C12	QER61HM-105	E CAPACITOR
	C13	QER61CM-476	E CAPACITOR
	C14	QER61CM-476	E CAPACITOR
	C15	QFV41HJ-123	TF CAPACITOR
	C16	QFV41HJ-123	TF CAPACITOR
	C17	QER61CM-336	E CAPACITOR
	C18	QER61CM-336	E CAPACITOR
	C19	QFN31HJ-273	M CAPACITOR
	C20	QFN31HJ-273	M CAPACITOR
	C21	QER61HM-105	E CAPACITOR
	C22	QER61HM-105	E CAPACITOR
	C23	QCSA1HJ-122	CAPACITOR
	C24	QCSA1HJ-122	CAPACITOR
	C25	QCSA1HJ-151	CAPACITOR
	C26	QCSA1HJ-151	CAPACITOR
	C27	QER61CM-226	E CAPACITOR
	C28	QER61CM-226	E CAPACITOR
	C29	QEK61AM-227	E CAPACITOR
	C30	QEK61AM-227	E CAPACITOR
	C31	QER61CM-336	E CAPACITOR
	C32	QER61CM-336	E CAPACITOR
	C33	QEPA1CM-106	NP E CAPACITOR
	C34	QEPA1CM-106	NP E CAPACITOR
	C35	QER61CM-336	E CAPACITOR
	C36	QER61CM-336	E CAPACITOR
	C37	QER61CM-476	E CAPACITOR
	C38	QER61CM-476	E CAPACITOR
	C39	QFN31HJ-103	M CAPACITOR
	C40	QFN31HJ-103	M CAPACITOR
	C41	QER61HM-105	E CAPACITOR
	C42	QER61HM-105	E CAPACITOR
	C43	QER61CM-476	E CAPACITOR
	C44	QER61CM-476	E CAPACITOR
	C45	QFP42AF-333M	PP CAPACITOR
	C46	QFP42AF-333M	PP CAPACITOR
	C55	QER61CM-106	E CAPACITOR
	C56	QER61CM-106	E CAPACITOR
	C57	QFN31HJ-822	M CAPACITOR
	C58	QFN31HJ-822	M CAPACITOR
	C59	QER61HM-105	E CAPACITOR
	C60	QER61HM-105	E CAPACITOR
	C61	QER61HM-105	E CAPACITOR
	C62	QER61HM-105	E CAPACITOR
	C63	QEK61CM-107	E CAPACITOR
	C64	QEK61CM-107	E CAPACITOR
	C65	QER61CM-336	E CAPACITOR
	C66	QER61CM-336	E CAPACITOR
	C67	QEPA1CM-106	NP E CAPACITOR
	C68	QEPA1CM-106	NP E CAPACITOR
	C69	QFP32AF-103M	PP CAPACITOR
	C70	QFP32AF-103M	PP CAPACITOR
	C71	QFV41HJ-684	TF CAPACITOR
	C72	QFV41HJ-684	TF CAPACITOR
	C77	QFP42AF-222M	PP CAPACITOR
	C78	QFP42AF-222M	PP CAPACITOR
	C79	QFP42AF-122M	PP CAPACITOR
	C80	QFP42AF-122M	PP CAPACITOR
	C81	QER61HM-335	E CAPACITOR
	C82	QER61HM-335	E CAPACITOR
	C83	QER61CM-226	E CAPACITOR
	C84	QER61CM-226	E CAPACITOR
	C85	QCSA1HJ-8R0	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C86	QCSA1HJ-8R0	CAPACITOR
	C87	QER61EM-475	E CAPACITOR
	C88	QER61EM-475	E CAPACITOR
	C89	QER61CM-106	E CAPACITOR
	C90	QER61CM-106	E CAPACITOR
	C91	QER61CM-476	E CAPACITOR
	C92	QER61CM-476	E CAPACITOR
	C93	QFV41HJ-684	TF CAPACITOR
	C94	QFV41HJ-684	TF CAPACITOR
	C95	QCSA1HJ-181	CAPACITOR
	C96	QCSA1HJ-181	CAPACITOR
	C97	QFP42AF-303M	PP CAPACITOR
	C98	QFP42AF-333M	PP CAPACITOR
	C99	QFN31HJ-102	M CAPACITOR
	C100	QFN31HJ-332	M CAPACITOR
	C101	QFN31HJ-103	M CAPACITOR
	C102	QFN31HJ-102	M CAPACITOR
	C104	QETC1CM-337	E CAPACITOR
	C105	QER61EM-475	E CAPACITOR
	C106	QER61CM-106	E CAPACITOR
	C107	QER61CM-476	E CAPACITOR
	L1	PGZ00121-472	COIL
	L2	PGZ00121-472	COIL
	L3	PU60206	LOW PASS FILTER
	L4	PU60206	LOW PASS FILTER
	L7	PGZ00121-562	COIL
	L8	PGZ00121-562	COIL
⚠	T1	PU60707	OSC TRANSFORMER
⚠	T2	PU60321	OSC TRANSFORMER
	BKT1	PRD43677	STAY(AUDIO)
	SCW1	GBST3006Z	SCREW, X2
	SCW2	DPSP2606Z	SCREW
	SLD1	PRS30031A	SHIELD PLATE ASSY
	SPC1	PGD40329-02	INSULATOR
	TP1	PU54983	TEST PIN, X19
	CN1	PU58844-3	CONNECTOR
	CN2	PU58844-3	CONNECTOR
	CN3	PU58844-2R	CONNECTOR
	CN4	PU58844-2	CONNECTOR
	CN5	PGZ00421-44	MALE CONNECTOR
	CN6	PGZ00190-011	CONNECTOR
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR

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* 16. FMA PRE/REC BOARD ASSEMBLY <08> *
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	PWBA	PRK20102B-01	FMA PRE/REC BOARD ASSY
	IC1	UPC1531HA	IC
	IC2	AN3920K	IC
	Q1	2SC1740S(S)	TRANSISTOR
	Q2	2SC1740S(S)	TRANSISTOR
	Q3	2SC1740S(S)	TRANSISTOR
	Q4	2SC1740S(S)	TRANSISTOR
	Q5	2SC1740S(S)	TRANSISTOR
	Q6	2SD973AR	TRANSISTOR
	Q7	2SB793AR	TRANSISTOR
	Q8	2SC1740S(S)	TRANSISTOR
	Q9	2SC1740S(S)	TRANSISTOR
	Q10	2SC1740S(S)	TRANSISTOR
	Q11	2SB793AR	TRANSISTOR
	Q12	2SB793AR	TRANSISTOR
	Q13	DTC124EF	TRANSISTOR
	Q14	DTC124EF	TRANSISTOR
	Q15	DTA124EF	TRANSISTOR
	Q16	2SC1740S(S)	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	R1	QRD161J-100	RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R2	QRD161J-100	RESISTOR
	R3	QRD161J-471	RESISTOR
	R4	QRD161J-471	RESISTOR
	R5	QRD161J-271	RESISTOR
	R6	QRD161J-222	RESISTOR
	R7	QRD161J-393	RESISTOR
	R8	QRD161J-393	RESISTOR
	R9	QRD161J-153	RESISTOR
	R10	QRD161J-153	RESISTOR
	R11	QVPC610-473	V RESISTOR
	R12	QRD161J-473	RESISTOR
	R13	QRD161J-103	RESISTOR
	R14	QRD161J-153	RESISTOR
	R15	QRD161J-473	RESISTOR
	R16	QRD161J-273	RESISTOR
	R17	QRD161J-332	RESISTOR
	R18	QRD161J-273	RESISTOR
	R19	QRD161J-273	RESISTOR
	R20	QRD161J-102	RESISTOR
	R21	QRD161J-273	RESISTOR
	R22	QRD161J-273	RESISTOR
	R23	QRD161J-102	RESISTOR
	R24	QRD161J-222	RESISTOR
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-122	RESISTOR
	R27	QRD161J-472	RESISTOR
	R28	QRD161J-152	RESISTOR
	R29	QRD161J-152	RESISTOR
	R30	QRD161J-472	RESISTOR
	R31	QRD161J-332	RESISTOR
	R32	QRD161J-332	RESISTOR
	R33	QVPC610-102	V RESISTOR
	R34	QRD161J-223	RESISTOR
	R35	QRD161J-223	RESISTOR
	R36	QVPC610-332	V RESISTOR
	R37	QRD161J-392	RESISTOR
	R38	QRD161J-102	RESISTOR
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-223	RESISTOR
	R41	QRD161J-223	RESISTOR
	R42	QRD161J-223	RESISTOR
	R43	QRD161J-223	RESISTOR
	R44	QRD161J-681	RESISTOR
	R45	QRD161J-681	RESISTOR
	R46	QRD161J-392	RESISTOR
	R47	QRD161J-392	RESISTOR
	R48	QRD161J-223	RESISTOR
	R49	QRD161J-102	RESISTOR
	R50	QRD161J-223	RESISTOR
	R51	QRD161J-102	RESISTOR
	R52	QRD161J-103	RESISTOR
	R53	QRD161J-332	RESISTOR
	R54	QRD161J-332	RESISTOR
	R55	QRD161J-102	RESISTOR
	R56	QRD161J-100	RESISTOR
	R57	QRD161J-100	RESISTOR
	R58	QRD161J-223	RESISTOR
	R59	QRD161J-223	RESISTOR
	R60	QRD161J-102	RESISTOR
	C1	QCS31HJ-820	CAPACITOR
	C2	QCS31HJ-820	CAPACITOR
	C3	QCF31HP-103	CAPACITOR
	C4	QCF31HP-103	CAPACITOR
	C5	QETC1HM-105	E CAPACITOR
	C6	QETC1HM-105	E CAPACITOR
	C7	QCF31HP-103	CAPACITOR
	C8	QCF31HP-103	CAPACITOR
	C9	QCF31HP-103	CAPACITOR
	C10	QETC1AM-476	E CAPACITOR
	C11	QETC1HM-104	E CAPACITOR
	C12	QETC1HM-225	E CAPACITOR
	C13	QCF31HP-103	CAPACITOR
	C14	QCF31HP-103	CAPACITOR
	C15	QCF31HP-103	CAPACITOR
	C16	QCF31HP-103	CAPACITOR
	C17	QCF31HP-103	CAPACITOR
	C18	QETC1AM-476	E CAPACITOR
	C19	QCF31HP-103	CAPACITOR
	C20	QCS31HJ-221	CAPACITOR
	C21	QCS31HJ-331	CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C22	QFN31HJ-682	M CAPACITOR
	C23	QCF31HP-103	CAPACITOR
	C24	QETC1AM-476	E CAPACITOR
	C25	QCF31HP-103	CAPACITOR
	C26	QCF31HP-103	CAPACITOR
	C27	QCF31HP-103	CAPACITOR
	C28	QCF31HP-103	CAPACITOR
	C29	QCF31HP-103	CAPACITOR
	C30	QCF31HP-103	CAPACITOR
	C31	QCF31HP-103	CAPACITOR
	C32	QCF31HP-103	CAPACITOR
	C33	QCF31HP-103	CAPACITOR
	C34	QCF31HP-103	CAPACITOR
	C35	QCF31HP-103	CAPACITOR
	C36	QCF31HP-103	CAPACITOR
	C37	QCF31HP-103	CAPACITOR
	C38	QETC1CM-476	E CAPACITOR
	C39	QCF31HP-103	CAPACITOR
	C40	QCF31HP-222	CAPACITOR
	C41	QCF31HP-103	CAPACITOR
	L1	PU53223-271J	COIL
	L2	PU53223-271J	COIL
	L3	PU53223-271J	COIL
	L4	PU53223-271J	COIL
	LPF1	PELN0374	BAND PASS FILTER
	BPF1	PU60610	BAND PASS FILTER(1.4MHZ)
⚠	K1	PGZ00354	FERRATE BEADS
⚠	K2	PGZ00354	FERRATE BEADS
	SCW1	DPSP2606Z	SCREW, X2
	SLD1	PRS30028	SHIELD PLATE(F)
	SPC1	PGD40329-02	INSULATOR
	TP1	PU54983	TEST PIN, X15
	CN1	PU58844-4	CONNECTOR
	CN2	PGZ00421-44	MALE CONNECTOR
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR
⚠	CP2	ICP-F10	CIRCUIT PROTECTOR

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* 17. REAR-1 BOARD ASSEMBLY <09> *
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PWBA	PRK10077E-02	REAR-1 BOARD ASSY, E/ED
	PRK10077F	REAR-1 BOARD ASSY, EP
D1	RD9.1EW	ZENER DIODE, EP
D2	RD9.1EW	ZENER DIODE, EP
D3	RD9.1EW	ZENER DIODE
D4	RD9.1EW	ZENER DIODE
D5	RD9.1EW	ZENER DIODE
R1	QRD167J-750	RESISTOR
BKT1	PRD43413	CONNECTOR BRACKET
J1	PGZ01613	RCA CONNECTOR
J2	PGZ01613	RCA CONNECTOR
J3	PGZ01615	RCA CONNECTOR, EP
J4	PGZ01615	RCA CONNECTOR, EP
J5	PGZ01615	RCA CONNECTOR, EP
J6	PGZ01615	RCA CONNECTOR, EP
J7	PGZ01614	RCA CONNECTOR
J9	PGZ01616	RCA CONNECTOR
SPC1	Q03093-439	WASHER, X3(EP) X1(E/ED)
SPC2	PU48611	RING, X3(EP) X1(E/ED)
VA1	PU49624-2	VARISTOR, X5
J10	PGZ01616	RCA CONNECTOR
J11	PGZ00440	BNC CONNECTOR
J12	PGZ00440	BNC CONNECTOR, EP

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	J13	PGZ00440	BNC CONNECTOR, EP
	CN1	PU58844-102	CONNECTOR
	CN2	PU58844-102Y	CONNECTOR
	CN3	PU58844-102R	CONNECTOR
	CN4	PU58844-102R	CONNECTOR
	CN5	PU58844-104R	CONNECTOR
	CN6	PU58844-104	CONNECTOR
	CN7	PU58844-104R	CONNECTOR, EP
	CN8	PU58844-104	CONNECTOR, EP
	CN9	PU58844-104Y	CONNECTOR, EP
	CN10	PU58844-104	CONNECTOR, EP
	CN11	PU58844-105	CONNECTOR
	CN12	PU58844-104	CONNECTOR
	CN17	PU58844-104	CONNECTOR
	CN18	PU58844-102	CONNECTOR
	CN19	PU58844-106	CONNECTOR

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* 18. FRONT BOARD ASSEMBLY <15> *
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	PWBA	PRK20111C	FRONT BOARD ASSY
	CL1	PU56729-2	WIRE CLAMP, X2
	CL2	PU59311-3	WIRE CLAMP
	SPC1	PQ40937	LED-SPACER, X7

-AUDIO METER BOARD ASSEMBLY <10>-

	PWBA	PRK20111B3-01	AUDIO METER BOARD ASSY
	IC1	PU60562-2	LED ASSY
	Q1	2SC3311A	TRANSISTOR
	Q2	2SC3311A	TRANSISTOR
	R1	QRSA08J-101YN	RESISTOR
	R2	QRSA08J-104YN	RESISTOR
	R3	QRSA08J-102YN	RESISTOR
	R4	QRSA08J-101YN	RESISTOR
	R5	QRSA08J-104YN	RESISTOR
	R6	QRSA08J-102YN	RESISTOR
	C1	QER41HM-105	E CAPACITOR
	C2	QER41HM-105	E CAPACITOR
	C3	QER40JM-107	E CAPACITOR
	SW1	QSS1N23-LO2	SLIDE SWITCH

-FRONT BOARD ASSEMBLY <15>-

	PWBA	PRK20111C1	FRONT BOARD ASSY
	IC1	UPD6345C	IC
	IC2	UPD6345C	IC
	IC3	TC4050BP	IC
	Q3	DTA114EF	TRANSISTOR
	LD1	LA-401VD	LE DIODE
	LD2	SEL1320G	LE DIODE
	LD3	SEL1320G	LE DIODE
	LD4	SEL1320G	LE DIODE
	LD5	SEL1320G	LE DIODE
	LD6	SEL1120R	LE DIODE
	LD7	SEL1120R	LE DIODE
	LD11	SEL1320G	LE DIODE
	R1	QRSA08J-102YN	RESISTOR
	R2	QRSA08J-102YN	RESISTOR
	R3	QRSA08J-102YN	RESISTOR
	R4	QRSA08J-102YN	RESISTOR
	R5	QRSA08J-102YN	RESISTOR
	R6	QRSA08J-102YN	RESISTOR
	R7	QRSA08J-101YN	RESISTOR
	R8	QRSA08J-102YN	RESISTOR
	R9	QRSA08J-101YN	RESISTOR
	VR1	PGZ01514	V RESISTOR
	VR2	PGZ01514	V RESISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R10	QRSA08J-101YN	RESISTOR
	R11	QRSA08J-101YN	RESISTOR
	R12	QRSA08J-471YN	RESISTOR
	R13	QRSA08J-471YN	RESISTOR
	R14	QRSA08J-471YN	RESISTOR
	R15	QRSA08J-471YN	RESISTOR
	R16	QRSA08J-471YN	RESISTOR
	R17	QRSA08J-471YN	RESISTOR
	R18	QRSA08J-471YN	RESISTOR
	R19	QRSA08J-331YN	RESISTOR
	R20	QRSA08J-331YN	RESISTOR
	R21	QRSA08J-331YN	RESISTOR
	R22	QRSA08J-331YN	RESISTOR
	R23	QRSA08J-471YN	RESISTOR
	R24	QRSA08J-471YN	RESISTOR
	R33	QRSA08J-102YN	RESISTOR
	R35	QRSA08J-103YN	RESISTOR
	R36	QRSA08J-221YN	RESISTOR
	R37	QRSA08J-103YN	RESISTOR
	C1	QCFA1HZ-223	CAPACITOR
	C2	QCFA1HZ-223	CAPACITOR
	C3	QCFA1HZ-223	CAPACITOR
	C4	QCFA1HZ-102	CAPACITOR
	C5	QER40JM-476	E CAPACITOR
	C6	QER40JM-476	E CAPACITOR
	C7	QCFA1HZ-223	CAPACITOR
	L1	PU53223-221J	COIL
		OR PU53223-221K	COIL
	CN3	PGZ01516	FEMALE CONNECTOR

-FRONT REMOTE BOARD ASSEMBLY <16>-

	PWBA	PRK20111B2-01	FRONT REMOTE BOARD ASSY
	JA1	PU47500	MINI JACK

****

****
* 19. REAR-2 BOARD ASSEMBLY <11> *
****

	PWBA	PRK10076A-01	REAR-2 BOARD ASSY
	IC1	TC4021BP	IC
	IC2	UPD6345C	IC
	IC3	UPD6345C	IC
	IC4	M51490L	IC
	IC6	TC4049BP	IC
	IC7	TC4049BP	IC
	IC9	TC4013BP	IC
	Q1	2SD638R	TRANSISTOR
	Q2	2SD638R	TRANSISTOR
	Q3	DTC143TF	TRANSISTOR
	Q5	DTC144EF	TRANSISTOR
	Q6	DTC144EF	TRANSISTOR
	D1	RD5.1EB2	ZENER DIODE
	D2	RD5.1EB2	ZENER DIODE
	D3	RD5.1EB2	ZENER DIODE
	D4	RD5.1EB2	ZENER DIODE
	D5	1SS133	DIODE
	D6	1SS133	DIODE
	R1	QRD161J-333	RESISTOR
	R2	QRD161J-333	RESISTOR
	R3	QRD161J-333	RESISTOR
	R4	QRD161J-333	RESISTOR
	R5	QRD161J-333	RESISTOR
	R6	QRD161J-333	RESISTOR
	R7	QRD161J-333	RESISTOR
	R8	QRD161J-333	RESISTOR
	R9	QRD161J-101	RESISTOR
	R10	QRD161J-101	RESISTOR
	R11	QRD161J-101	RESISTOR
	R12	QRD161J-101	RESISTOR
	R13	QRD161J-101	RESISTOR
	R14	QRD161J-101	RESISTOR
	R15	QRD161J-101	RESISTOR

<11><14><17>

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	R16	QRD161J-101	RESISTOR
	R17	QRD161J-101	RESISTOR
	R18	QRD161J-101	RESISTOR
	R19	QRD161J-101	RESISTOR
	R20	QRD161J-101	RESISTOR
	R21	QRD161J-101	RESISTOR
	R22	QRD161J-102	RESISTOR
	R23	QRD161J-102	RESISTOR
	R24	QRD161J-102	RESISTOR
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-102	RESISTOR
	R27	QRD161J-102	RESISTOR
	R28	QRD161J-181	RESISTOR
	R29	QRD161J-103	RESISTOR
	R30	QRD161J-223	RESISTOR
	R31	QRD161J-561	RESISTOR
	R32	QRD161J-181	RESISTOR
	R33	QRD161J-103	RESISTOR
	R34	QRD161J-223	RESISTOR
	R35	QRD161J-561	RESISTOR
	R36	QRD161J-152	RESISTOR
	R37	QRD161J-224	RESISTOR
	R38	QRD161J-103	RESISTOR
	R39	QRD161J-682	RESISTOR
	R40	QRD161J-473	RESISTOR
	R41	QRD161J-103	RESISTOR
	R42	QRD161J-102	RESISTOR
	R51	QRD161J-103	RESISTOR
	R57	QRD161J-102	RESISTOR
	R58	QRD161J-102	RESISTOR
	R59	QRD161J-562	RESISTOR
	R60	QRD161J-562	RESISTOR
	RA1	EXB-P88103M	NETWORK RESISTOR
	C1	QCF31HP-223	CAPACITOR
	C2	QCF31HP-223	CAPACITOR
	C3	QCF31HP-223	CAPACITOR
	C4	QETA1CM-476	E CAPACITOR
	C5	QCF31HP-102	CAPACITOR
	C6	QFN31HK-103	M CAPACITOR
	C7	QFN31HK-103	M CAPACITOR
	C8	QFN31HK-103	M CAPACITOR
	C9	QFN31HK-103	M CAPACITOR
	C10	QETA1CM-476	E CAPACITOR
	C11	QCF31HP-223	CAPACITOR
	C12	QETA1CM-476	E CAPACITOR
	C13	QFN41HK-474	M CAPACITOR
	C14	QCS31HJ-151	CAPACITOR
	C15	QFN31HK-103	M CAPACITOR
	C16	QCF31HP-223	CAPACITOR
	C17	QETA1CM-476	E CAPACITOR
	C18	QETC1HM-105	E CAPACITOR
	C19	QETC1HM-105	E CAPACITOR
	C20	QFN31HK-222	M CAPACITOR
	C28	QCF31HP-223	CAPACITOR
	L1	PU48530-221J	COIL
	L2	PU53223-221J	COIL
	BKT1	PRD30695	BOARD BRACKET
	SCW1	GBST3006Z	SCREW, X2
	SPC1	PU60010-5	SPACER, X2
	VA1	PU49624-2	VARISTOR, X27
	TP3	PU54983	TEST PIN, X3
	CN1	PU58B44-8	CONNECTOR
	CN2	PU58B44-9R	CONNECTOR
	CN3	PU58B44-7	CONNECTOR
	CN4	PU58B44-5	CONNECTOR
	CN5	PU58B44-7	CONNECTOR
	CN6	PU58B44-2	CONNECTOR
	CN7	PU58B44-6	CONNECTOR
	CN8	PU58B44-2	CONNECTOR
	CN9	PU58B44-2R	CONNECTOR
	CN10	PU58B44-4	CONNECTOR
	CN11	PU58B44-2	CONNECTOR
	CN12	PU58B44-4Y	CONNECTOR
	CN13	PU58B44-7	CONNECTOR
	CN14	PU58B44-3	CONNECTOR
	CN16	PU58B44-2	CONNECTOR
	CN17	PU58B44-4	CONNECTOR
	CN18	PU58B44-4R	CONNECTOR
	CN19	PU58B44-10	CONNECTOR
	CN20	PU58B44-4Y	CONNECTOR
	CN21	PU58B44-4R	CONNECTOR
	CN22	PU58B44-2Y	CONNECTOR
	CN23	PU58B44-2	CONNECTOR
	CN25	PU58B44-3R	CONNECTOR
	CN26	PU58B44-2R	CONNECTOR
	CN27	PU58B44-2Y	CONNECTOR
	CN28	PU58B44-2	CONNECTOR
	CN29	PU58B44-2Y	CONNECTOR
	CN30	PU58B44-4R	CONNECTOR

****

****
* 20. SUB REGULATOR BOARD ASSEMBLY <14> *
****

	PWBA	PGE20350B-01	SUB REGULATOR BOARD ASSY
	IC2	SI-3522V	IC
	IC3	SI-3052V	IC
	Q1	2SD1691(K)	TRANSISTOR
		OR 2SD1691(L)	TRANSISTOR
	Q2	2SD1691(K)	TRANSISTOR
		OR 2SD1691(L)	TRANSISTOR
	Q3	OR 2SD1691(K)	TRANSISTOR
		OR 2SD1691(L)	TRANSISTOR
	D1	RD18EB3	ZENER DIODE
	C1	QETA1VM-107	E CAPACITOR
	C3	QFN31HJ-334	M CAPACITOR
	C4	QETA1CM-107	E CAPACITOR
	C5	QFN31HJ-334	M CAPACITOR
	C6	QETA1CM-107	E CAPACITOR
	C7	QETA1CM-477	E CAPACITOR
	C8	QETA1CM-476	E CAPACITOR
	C9	QETA1CM-477	E CAPACITOR
△	TH1	PU52108-101K	POSITIVE THERMISTOR
	TH2	PU52108-101K	POSITIVE THERMISTOR
	TH3	PU52108-101K	POSITIVE THERMISTOR
	HS1	PGZ01666	HEAT SINK
	SCW1	SDSP3008Z	SCREW
	SPC1	PGZ01649-02	SPACER, X4 NOT INCLUDED
	SPC2	PGZ01650	SPACER BUSH, X4 NOT INCLUDED
	SPC3	PGZ00171	TR SPACER
	TP1	PU54983	TEST PIN, X10
	CN1	PGZ01727-06	CONNECTOR
	CN2	PU58B44-9	CONNECTOR
	CN3	PU58B44-4	CONNECTOR
	CN4	PU58B44-4Y	CONNECTOR
	CN5	PU58B44-4	CONNECTOR
	CN6	PU58B44-4R	CONNECTOR
	CN7	PU58B44-2	CONNECTOR
	CN8	PU58B44-10	CONNECTOR
	CN9	PU58B44-9R	CONNECTOR
	CN10	PU58B44-4Y	CONNECTOR
	CN11	PU58B44-2R	CONNECTOR
	CN12	PU58B44-2Y	CONNECTOR
	CN13	PU43351-2	CONNECTOR
	CN14	PU43351-2R	CONNECTOR
	CN15	PU43351-2Y	CONNECTOR
	CN16	PU43351-2	CONNECTOR
	CN17	PU58B44-2	CONNECTOR

****

****
* 21. MECHA FRONT BOARD ASSEMBLY <17> *
****

	PWBA	PRK2010BA-01	MECHA FRONT BOARD ASSY

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	SPC1	PQ40937	LED-SPACER
			-MECHA FRONT BOARD ASSEMBLY <17>-
	PWBA	PRK2010BA1-01	MECHA FRONT BOARD ASSY
	IC1	UPD6345C	IC
	Q1	DTA114EF	TRANSISTOR
	Q2	DTA114EF	TRANSISTOR
	D1	1SS133	DIODE
	D2	1SS133	DIODE
	LD1	TLSG208	LE DIODE
	LD2	GL5UR3K1	LE DIODE
	R1	QRD161J-102	RESISTOR
	R2	QRD161J-102	RESISTOR
	R3	QRD161J-101	RESISTOR
	R4	QRD161J-101	RESISTOR
	R5	QRD161J-101	RESISTOR
	R6	QRD161J-101	RESISTOR
	R7	QRD161J-101	RESISTOR
	R8	QRD161J-102	RESISTOR
	R9	QRD161J-102	RESISTOR
	R10	QRD161J-471	RESISTOR
	R11	QRD161J-331	RESISTOR
	R12	PGZ00345-02	V RESISTOR
	R13	PGZ01514	V RESISTOR
	R14	PGZ01514	V RESISTOR
	R15	QRD161J-473	RESISTOR
	R16	QRD161J-331	RESISTOR
	C1	QER40JM-476	E CAPACITOR
	C2	QCF11HP-223	CAPACITOR
	S1	PGZ01627	PUSH SWITCH
	CN1	PU59513-6	CONNECTOR
	CN3	PU59513-4	CONNECTOR
	CN4	PU59513-6	CONNECTOR
			-LOADER BOARD ASSEMBLY <19>-
	PWBA	PRK2010BA2-01	LOADER BOARD ASSY
	K1	PGZ00354	FERRATE BEADS
	BKT1	PRD43415	PLATE
	SCW1	PGZ00925	SCREW
	VA1	PU49624-2	VARISTOR, X8
	CN6	PGZ00915	9P CONNECTOR

****

****
* 22. MOTHER BOARD ASSEMBLY <18> *
****

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PRK20146A-02	MOTHER BOARD ASSY
	CL1	PU59311	WIRE CLAMP, X2
	CL2	PU59311-2	WIRE CLAMP, X1
	HD1	PGZ01663	CORNER HOLDER, X6
	SPC1	PRD30030-93	PAD, X6
	CN1	PGZ01612-32	MULTI CONNECTOR
	CN2	PGZ01612-32	MULTI CONNECTOR
	CN3	PU58844-8	CONNECTOR
	CN5	PU58844-3	CONNECTOR
	CN7	PU58844-2	CONNECTOR
	CN8	PU58844-6	CONNECTOR
	CN9	PU58844-5	CONNECTOR
	CN10	PU58844-4	CONNECTOR
	CN11	PU58844-10	CONNECTOR
	CN12	PU59934-17	WIRE HOLDER
	CN13	PU58844-6	CONNECTOR
	CN15	PU58844-8	CONNECTOR
	CN101	PGZ00420-64	FEMALE CONNECTOR
	CN102	PGZ00420-44	FEMALE CONNECTOR
	CN103	PGZ00420-44	FEMALE CONNECTOR

****

****
* 23. SECAM COLOR BOARD ASSEMBLY (ED) <20> *
****

#△	REF NO.	PART NO.	PART NAME, DESCRIPTION
	PWBA	PRK10108A	SECAM COLOR BOARD ASSY,ED ONLY
	IC1	M51646SP	IC
	Q1	2SC2647C	TRANSISTOR
	Q2	2SC2647C	TRANSISTOR
	Q3	2SC2647C	TRANSISTOR
	Q4	2SK656	FE TRANSISTOR
	Q5	2SC2647C	TRANSISTOR
	Q6	2SC2647C	TRANSISTOR
	Q7	2SB642(Q)	TRANSISTOR
	Q8	2SB642(Q)	TRANSISTOR
	Q9	2SC2647C	TRANSISTOR
	Q10	2SC2647C	TRANSISTOR
	D1	1SS99	DIODE
	D2	1SS133	DIODE
	D3	1SS133	DIODE
	R1	QRD161J-222	RESISTOR
	R2	QRD161J-104	RESISTOR
	R3	QRD161J-103	RESISTOR
	R4	QRD161J-103	RESISTOR
	R5	QRD161J-105	RESISTOR
	R6	QRD161J-102	RESISTOR
	R7	QRD161J-0R0	RESISTOR
	R8	QRD161J-471	RESISTOR
	R9	QRD161J-101	RESISTOR
	R10	QRD161J-103	RESISTOR
	R11	QRD161J-332	RESISTOR
	R12	QRD161J-181	RESISTOR
	R13	QRD161J-103	RESISTOR
	R14	QRD161J-183	RESISTOR
	R15	QRD161J-102	RESISTOR
	R16	QRD161J-102	RESISTOR
	R17	QRD161J-102	RESISTOR
	R18	QRD161J-102	RESISTOR
	R19	QRD161J-181	RESISTOR
	R20	QRD161J-562	RESISTOR
	R21	QRD161J-561	RESISTOR
	R22	QRD161J-820	RESISTOR
	R23	QRD161J-182	RESISTOR
	R24	QRD161J-102	RESISTOR
	R25	QRD161J-102	RESISTOR
	R26	QRD161J-681	RESISTOR
	R27	QRD161J-122	RESISTOR
	R28	QRD161J-121	RESISTOR
	R29	QRD161J-152	RESISTOR
	R30	QRD161J-181	RESISTOR
	R31	QRD161J-563	RESISTOR
	R32	QRD161J-103	RESISTOR
	R33	QRD161J-0R0	RESISTOR
	R34	QRD161J-103	RESISTOR
	R35	QRD161J-103	RESISTOR
	R36	QRD161J-222	RESISTOR
	R37	QRD161J-102	RESISTOR
	R38	QRD161J-102	RESISTOR
	R39	QRD161J-102	RESISTOR
	R40	QRD161J-561	RESISTOR
	R41	QRD161J-102	RESISTOR
	R42	QRD161J-153	RESISTOR
	R43	QRD161J-393	RESISTOR
	R44	QRD161J-0R0	RESISTOR
	R45	QRD161J-0R0	RESISTOR
	R46	QRD167J-223	RESISTOR
	C1	QETC1HM-105	E CAPACITOR
	C2	QFN31HJ-102	M CAPACITOR
	C3	QFN31HJ-223	M CAPACITOR
	C4	QFN31HJ-223	M CAPACITOR
	C5	QCF31HP-223	CAPACITOR
	C6	QETCQJM-476	E CAPACITOR
	C7	QCF31HP-223	CAPACITOR
	C8	QETCQJM-476	E CAPACITOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	C9	QFN31HJ-223	M CAPACITOR
	C10	QFN31HJ-103	M CAPACITOR
	C11	QFN31HJ-103	M CAPACITOR
	C12	QFN31HJ-104	M CAPACITOR
	C13	QCF31HP-103	CAPACITOR
	C14	QETC1EM-475	E CAPACITOR
	C15	QETC1CM-106	E CAPACITOR
	C16	QFN31HJ-103	M CAPACITOR
	C17	QFN31HJ-103	M CAPACITOR
	C18	QFN31HJ-103	M CAPACITOR
	C19	QFN31HJ-103	M CAPACITOR
	C20	QFN31HJ-103	M CAPACITOR
	C21	QFN31HJ-103	M CAPACITOR
	C22	QETC1CM-106	E CAPACITOR
	C23	QFN31HJ-223	M CAPACITOR
	C24	QETC1AM-226	E CAPACITOR
	C25	QFN31HJ-103	M CAPACITOR
	C26	QFN31HJ-273	M CAPACITOR
	C27	QCS31HJ-470	CAPACITOR
	C28	QETC1CM-476	E CAPACITOR
	C29	QETCQJM-476	E CAPACITOR
	C30	QCF31HP-223	CAPACITOR
	L1	PU48530-221J	COIL
	L2	PU48530-221J	COIL
	L3	PU48530-121J	COIL
	L4	PU48530-221J	COIL
	LPF1	PGZ01260	LOW PASS FILTER
	BPF1	PU54437-2	BAND PASS FILTER
	BPF2	PU54420-2	BAND PASS FILTER
	BPF3	PU54421-2	BAND PASS FILTER
	DL1	PGZ01259	DELAY LINE
	SW1	PU54440	SWITCH
	T1	PU60220	COIL
	T2	PU60221	COIL
	GND1	PU56008	TEST-PIN
	TP1	PU54983	TEST PIN, X6
	CN1	PU58844-6	CONNECTOR
	CN2	PU58844-8	CONNECTOR
	CN3	PU58844-2	CONNECTOR

****

****
* 24. DECK TERMINAL BOARD ASSEMBLY <21> *
****

	PWBA	PU22509E1	DECK TERMINAL BOARD ASSY
	R1	QRD182J-151	RESISTOR
	R3	QRD182J-331	RESISTOR
	PS1	PU60271	PHOTO INTERRUPTER
	CN1	PEMC0722-017	WIRE TRAP

****

****
* 25. RELAY BOARD ASSEMBLY <22> *
****

	PWBA	PU22509E2-01	RELAY BOARD ASSY
⚠	LC1	PU61192-222	N FILTER
⚠	LC2	PU61192-222	N FILTER
	WR1	PW30113-60ABZ62	PARALLEL WIRE
		OR PW3011B-60ABZ62	PARALLEL WIRE

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION

****

****
* 26. END SENSOR BOARD ASSEMBLY <24> *
****

	PWBA	PU22509E4	END SENSOR BOARD ASSY
	Q1	PN26BR-NC	PHOTO TRANSISTOR
	HD1	PQ31047-1-4	END SENSOR HOLDER
	WR1	PU58898	WIRE
	CN1	PU59945-102	WIRE SOCKET

****

****
* 27. A/C HEAD BOARD ASSEMBLY <35> *
****

	PWB	PGE40333	A/C HEAD BOARD
	R1	QRD167J-100	RESISTOR
	R2	QRD167J-100	RESISTOR
	CN1	PU49215-104	CONNECTOR

****

****
* 28. FUSE BOARD ASSEMBLY <36> *
****

	PWBA	PGE30227B	FUSE BOARD ASSY
⚠	HD1	PU51212	FUSE CLIP, X8
	CN1	PU43351-108	CONNECTOR

****

****
* 29. UPPER DRUM BOARD ASSEMBLY <51> *
****

	PWB	PDM3193	UPPER DRUM BOARD

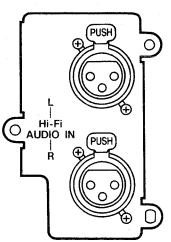
****

****
* 30. CASSETTE HOUSING BOARD ASSEMBLY <56> *
****

	PWB	PB30043	CASSETTE HOUSING BOARD
		OR PB30097	CASSETTE HOUSING BOARD
	Q1	PN26BR-NC	PHOTO TRANSISTOR
	R1	QRD162J-471	RESISTOR
	PS1	PU58879	PHOTO INTERRUPTER
	CN1	PU58844-106	CONNECTOR

BR-7020E OPTIONAL ACCESSORIES

SA-K724E XLR CONNECTORS



SPECIFICATIONS

Function : XLR connectors for Hi-Fi audio input.
(Lockable)

Specifications

Input	:	–6 dBs, 10 k-ohms, balanced
Dimensions	:	54 (W) x 76 (H) x 43 (D) mm
Weight	:	75 g

*This product will be installed at the factory as ordered when purchasing. It is not available as an ordinary optional product.

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2. ELECTRICAL PARTS LIST

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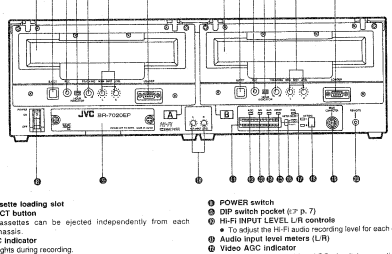
Note: *The contents of this instructions is the same as what are written on pages 6 of the instructions of the BR-7020E/ED/EP.*

INSTRUCTIONS

CONTROLS AND CONNECTORS

FRONT PANEL



❷ Cassette loading slot

❸ EJECT button
- Cassettes can be ejected independently from each chassis.

❹ REC indicator
- Lights during recording.
- Blinks when a malfunction occurs during playback (BR-7020EP only) or recording.

❺ Hour meter LED indicator
- LED color changes from Green to Orange to Red to indicate approximate total operating hours.

0H	1000H	2000H	3000H
	Green Lit	Green Blinking	Orange Lit

4000H	5000H	6000H
Orange Blinking	Red Lit	Red Blinking

❻ TRACKING control

❼ NORM INPUT LEVEL L/R controls
- To adjust the normal audio recording level for each channel.

❽ LOADER connector
- Connect the SA-L50U auto loader's VTR cable (optional).
- DC power supply with cassette loaded: 20 V DC 0.42 A, 5 V DC 0.15 A (Normal current: 20 V DC 0.015 A, 5 V DC 0.10 A)

❾ POWER switch

❿ DIP switch pocket (☞ p. 7)

⓫ Hi-Fi INPUT LEVEL L/R controls
- To adjust the Hi-Fi audio recording level for each channel.

⓬ Audio input level meters (L/R)

⓭ Video AGC indicator
- Lights when the video AGC circuit is operating during recording.

⓮ Dolby NR indicator (NR)

⓯ Hi-Fi audio recording indicator (Hi-Fi)

⓰ Audio limiter indicator (LIMITER)

⓱ METER SELECT switch
- To select Hi-Fi, NORMAL A, or NORMAL B audio level indication.
- Hi-Fi audio recording level is simultaneously adjusted for both chassis.
- Normal audio recording level can be separately adjusted for each chassis (A or B).

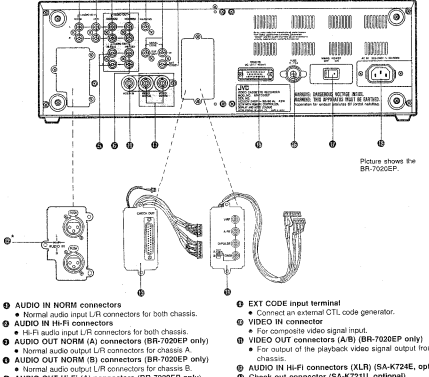
⓲ PAL indicator
- Lights when the power is on.
- When the BR-7020ED is in the SECAM mode, this indicator goes off.

⓳ WARNING display
- Displays an alphanumeric warning code when a malfunction occurs.
- The A or B indicator also lights to indicate which chassis is malfunctioning.

⓴ MULTI CONNECTOR terminal
- Connect the optional SA-K723U Multi-Display Unit.

㉑ REMOTE terminal
- Connect the optional RM-G30U Remote Control Unit.

REAR PANEL



Picture shows the BR-7020EP.

❶ AUDIO IN NORM connectors
- Normal audio input L/R connectors for both chassis.

❷ AUDIO IN Hi-Fi connectors
- Hi-Fi audio input L/R connectors for both chassis.

❸ AUDIO OUT NORM (A) connectors (BR-7020EP only)
- Normal audio output L/R connectors for chassis A.

❹ AUDIO OUT NORM (B) connectors (BR-7020EP only)
- Normal audio output L/R connectors for chassis B.

❺ AUDIO OUT Hi-Fi (A) connectors (BR-7020EP only)
- Hi-Fi audio output L/R connectors for chassis A.

❻ AUDIO OUT Hi-Fi (B) connectors (BR-7020EP only)
- Hi-Fi audio output L/R connectors for chassis B.

❼ WARNING OUT connector
- Outputs a warning signal when a chassis is malfunctioning.

❽ SERIAL CODE IN/BUF OUT terminals
- Serial code signals input to the IN terminal are processed by a buffer and then output from the OUT terminal, reducing wiring loss when controlling numerous units in series.
- Connect the OUT terminal to the IN terminal of another duplicator.

❾ EXT CODE input terminal
- Connect an external CTL code generator.

❿ VIDEO IN connector
- For composite video signal input.

⓫ VIDEO OUT connectors (A/B) (BR-7020EP only)
- For output of the playback video signal output from each chassis.

⓬ AUDIO IN Hi-Fi connectors (XLR) (SA-K724E, optional)*

⓭ Check out connector (SA-K721U, optional)

⓮ Test point unit (SA-K722U, optional)
- Outputs Hi-Fi audio RF and video RF signals from chassis A or B as selected with the A/B switch. These signals can be checked on an oscilloscope.

⓯ REMOTE connector (34-pin)
- Connect a parallel remote control unit.

⓰ Fuse

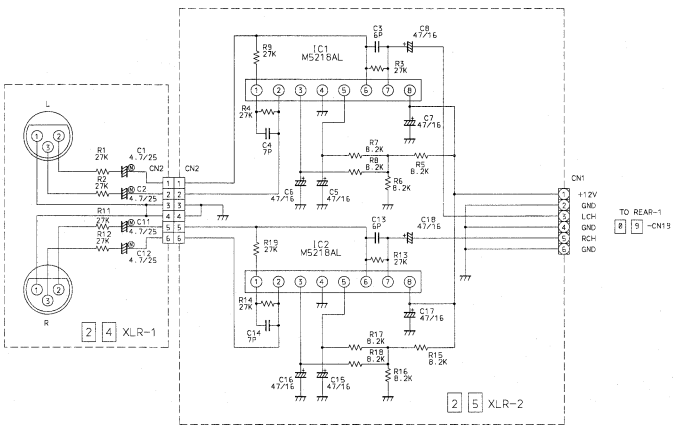
⓱ MAINS POWER switch
- Set to ON to supply power to the recorder.

⓲ AC input socket (AC IN)

*For more information, ☞ p. 12.

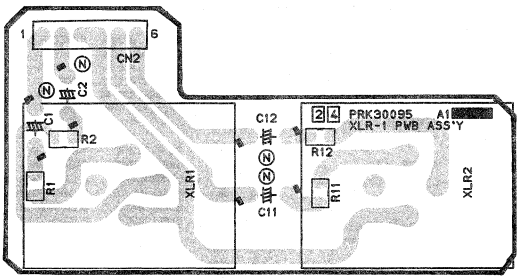
SECTION 1
DIAGRAMS AND CIRCUIT BOARDS

1.1 XLR-1 AND XLR-2 SCHEMATIC DIAGRAM

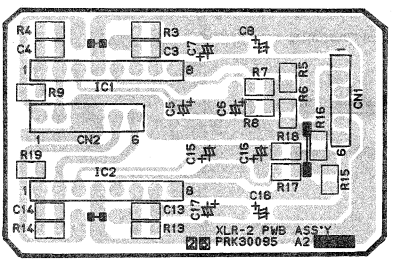


1.2 XLR-1 AND XLR-2 CIRCUIT BOARDS

— XLR-1 —



— XLR-2 —



SECTION 2
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

[2][4] [2][5]

#⚠REF No.	PART No.	PART NAME, DESCRIPTION	
XLR BOARD ASSEMBLY <24><25>			
PWBA	PRK30095A	XLR BOARD ASSY	
BKT1	PRD30886-02	BRACKET	
SCW1	SPSP2606M	SCREW, × 4	
- XLR-1 BOARD ASSEMBLY <24> -			
PWBA	PRK30095A1	XLR-1 BOARD ASSY	
R1	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R2	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R11	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R12	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
C1	QEPA1EM-475	NP E CAPACITOR	4.7μF,25V
C2	QEPA1EM-475	NP E CAPACITOR	4.7μF,25V
C11	QEPA1EM-475	NP E CAPACITOR	4.7μF,25V
C12	QEPA1EM-475	NP E CAPACITOR	4.7μF,25V
J1	PGZ00928-02	XLR CONNECTOR, × 2	
- XLR-2 BOARD ASSEMBLY <25> -			
PWBA	PRK30095A2	XLR-2 BOARD ASSY	
IC1	M5218AL	IC	
IC2	M5218AL	IC	
R3	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R4	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R5	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R6	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R7	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R8	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R9	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W

#⚠REF No.	PART No.	PART NAME, DESCRIPTION	
R13	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R14	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
R15	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R16	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R17	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R18	QRSA08J-822YN	RESISTOR	8.2kΩ ,1／10W
R19	QRSA08J-273YN	RESISTOR	27kΩ ,1／10W
C3	QCTA1CH-6R0	CAPACITOR	6pF,16V
C4	QCTA1CH-7R0	CAPACITOR	7pF,16V
C5	QER61AM-476	E CAPACITOR	47μF,10V
C6	QER61AM-476	E CAPACITOR	47μF,10V
C7	QER61CM-476	E CAPACITOR	47μF,16V
C8	QER61CM-476	E CAPACITOR	47μF,16V
C13	QCTA1CH-6R0	CAPACITOR	6pF,16V
C14	QCTA1CH-7R0	CAPACITOR	7pF,16V
C15	QER61AM-476	E CAPACITOR	47μF,10V
C16	QER61AM-476	E CAPACITOR	47μF,10V
C17	QER61CM-476	E CAPACITOR	47μF,16V
C18	QER61CM-476	E CAPACITOR	47μF,16V
CN2	PGZ00180-006	CONNECTOR	

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